THE ENGINEERING AND MINING JOURNAL
AND
COAL

Entered at the Post-Office of New York, N. Y., as Second-Class Matter.

VOL. XLVI. JULY 28. No. 4.

RICHARD P. ROTHWELL, C.E., M.E.,
ROSSITER W. RAYMOND, Ph.D., M.E., } Editors.

**Cable Address: "Rothwell," New York.**

Books for review and all communications for the JOURNAL should be addressed, Managing Editor, P.O. Box 1833, New York.

Communications for Mr. RAYMOND should be addressed to ROSSITER W. RAYMOND, P.O. Box 1465, New York. Articles written by Mr. Raymond will be signed thus *; and only for articles so signed is he responsible.

The following gentlemen are authorized to receive advertisements and subscriptions for the ENGINEERING AND MINING JOURNAL:
Mr. J. Viennot, 504 Walnut street, Philadelphia.
Mr. C. David, Duluth, Minn.
Mr. J. I. Souther, Hurley, Wis.
Mr. Geo. Sheldon, Ishpeming, Mich.
Mr. J. A. Ede, for Ironton, O.
Mr. Morgan Robertson, 195 Wabash avenue, Chicago.
Mr. O. J. Frost, care Boston & Colorado Smelting Company, 11 and 13 Clayton Block, Denver, Colo.
Mr. L. P. Fisher, 21 Merchants Exchange, San Francisco, Cal.

**London Office:** Finsbury Chambers, 76 Finsbury Pavement, London, E. C. Mr. Thomas B. Provis, Civil and Mining Engineer, Manager.

REMITTANCES should always be made by Bank Drafts, Post-Office Orders, or Express Money Orders on New York, payable to THE SCIENTIFIC PUBLISHING COMPANY.

**Advertising Rates.**—See page XVI.

**THE SCIENTIFIC PUBLISHING CO., Publishers.**
**P.O. Box 1833. 27 Park Place, New York.**

CONTENTS.

| | PAGE. |
|---|---|
| Mineral Statistics of the United States for 1887 | 59 |
| Our Precious Metal Production in 1887. | 59 |
| Statistics of Iron and Steel Production, 1888 | 59 |
| An Australian Mining Boom Collapsing. | 59 |
| Aerial Engineering | 60 |
| Text-Books by Practitioners | 60 |
| Electrical Transmission of Power in Mining and Metallurgy | 60 |
| On the Igneous Formation of Silicates and Analogous Salts | 61 |
| New Publications | 61 |
| Production of Pig Iron and Steel in the United States in 1888 | 62 |
| The De Beers Diamond Mine Disaster | 63 |
| How Arkansas Bubbles are Inflated and Pricked | 63 |
| Bromine vs. Chlorine for Gold Extraction | 64 |
| An Electric Drill | 64 |
| Aliens and Mineral Lands | 64 |
| Recovery of Sulphur from Residues of Leblanc Process | 64 |
| Compulsory Insurance of Workmen in Germany | 64 |
| Large Mining Pump | 64 |
| Compressed Paper for Axle Box Bearings | 64 |
| The Sprague Electric Aerial Tramway | 65 |
| Mineral Statistics of the United States in 1887 | 66 |
| Free Entry of Mineralogical Specimens. | 67 |
| Canadian-Australian Submarine Cable | 67 |
| Flash Photographs of Underground Workings | 67 |
| Recent Changes of Tariff in Ecuador | 67 |
| Mineralizing Action of Alkaline Sulphides | 67 |
| The New Industrial Era in India | 67 |
| Iron in Porcelain | 67 |
| Engineering Education in Japan | 67 |
| The Great Log-Raft | 67 |
| Personals | 68 |
| Industrial Notes | 68 |
| Contracting Notes | 68 |

| | | | | | |
|---|---|---|---|---|---|
| MINING NEWS: | | New Jersey | 71 | Boston | 72 |
| Alabama | 69 | Ohio | 71 | Buffalo | 72 |
| Arizona | 69 | Pennsylvania | 71 | Pittsburg | 73 |
| Arkansas | 69 | Utah | 72 | METALS | 73 |
| California | 69 | WashingtonT. | 72 | CHEMICALS | 73 |
| Colorado | 69 | West Virginia | 72 | IRON: New York | 73 |
| Dakota | 70 | Wyoming | 72 | Louisville | 74 |
| Idaho | 70 | FOREIGN MINING NEWS. | | Philadelphia | 74 |
| Illinois | 70 | Japan | 72 | Pittsburg | 74 |
| Indiana | 70 | Mexico | 72 | MINING STOCKS: | |
| Iowa | 70 | New Mexico | 72 | New York | 78 |
| Kansas | 70 | MARKETS: | | Baltimore | 75 |
| Michigan | 70 | COAL: New York | 72 | Birmingham | 75 |
| Minnesota | 71 | | | Pittsburgh | 75 |
| Missouri | 71 | | | London | 75 |
| Montana | 71 | | | Paris | 75 |
| Nevada | 71 | | | San Francisco | 77 |
| | | | | Boston | 78 |
| | | | | FREIGHTS | 73 |
| | | | | FINANCIAL | 78 |
| | | | | DIVIDENDS | 78 |
| | | | | ASSESSMENTS | 78 |
| | | | | PIPE LINE CERT. | 78 |

**Advertisers' Index** xix

## MINERAL STATISTICS OF THE UNITED STATES FOR 1887.

Through the courtesy of Dr. DAVID T. DAY, Chief of the Department of Mineral Statistics of the Geological Survey of the United States, we are enabled to publish on another page, from advance proofs, the statistical returns for 1887. This very interesting and valuable information is the most convincing proof of the wonderful rapidity with which our mineral industries continue to be developed.

The figures from 1882, which we annex, renders comparison easy. The spot value, or value at the place of production, is given as more than $538,000,000, or is greater than that of the mining products of Great Britain and exceeds that of all other European countries combined.

The vastness of this mineral industry or the rapidity of its development is not alone a proof of the natural resources with which nature has so richly endowed this country, but it is the most convincing tribute to the skill of our engineers, and justifies the fact that American engineers and American mining and metallurgical practice are in demand in every part of the world. It would indeed be strange if the native American ingenuity, guided by the experience gained in producing these enormous quantities of minerals and metals, should not have evolved a "practice" in mining and metallurgy superior to the tradition fettered arts in the old European countries.

## OUR PRECIOUS METAL PRODUCTION IN 1887.

Referring to our remarks in the last issue of the JOURNAL on the Director of the Mint's report of the production of precious metals in 1887, we have received from the Director the following explanation:

"The abstract of Report on Production, which you fairly criticise, is subject to revision and will be corrected as to those States hitherto treated as non-producing, and for which no special inquiry has been made. It seems that this item is too low and has been in past years, without affecting aggregates which are obtained from mint and custom returns, etc. The statement referred to, as fully explained in the report itself, is merely an approximate distribution of estimated aggregates. In other words, the aggregate is got first and afterwards approximately apportioned.

"The States which have been passed over, as you justly point out, will be given credit in the corrected statement. We have, indeed, track of some $47,000 gold and $35,000 silver, a matter of interest only as to the States in question, our own estimate in round numbers, by way of aggregate, not being affected by the comparatively small product.

"As you say, my inquiries into cost of production of gold and silver will be more curious than useful. My conclusions are practically the same as your own views, which, so far as I am aware, are shared by all experienced persons. My inquiry was a venture by way of an effort to correct some absurd testimony given before the Royal (silver) Commission, as you will see by a copy of the questions sent herewith."

As Dr. KIMBALL observes, the small figures of output of certain States, which we criticised, are only important to the States concerned, being too inconsiderable to have much influence in the grand total. As, however, Michigan is just at present promising to give us a good deal of gold, and these mint figures are quoted for or against the several Southern States mentioned, it is more important for them than the mere amounts would indicate. These, indeed, are in reality, without any reduction, a great disappointment.

## STATISTICS OF IRON AND STEEL PRODUCTION, 1888.

On another page we publish the statistics of the iron and steel trade for the first half of the current year, collected by the American Iron and Steel Association. These figures, though not quite as favorable as during the "boom" of a year ago, are yet far from being unsatisfactory. Our production of pig-iron was only 29,203 gross tons less than in the corresponding six months of 1887, though it was 347,761 tons less than in the second half of that year.

The decreased production of the present year is wholly in Bessemer pig-iron. The production of foundry iron, which measures more accurately the industrial activity of the country, was greater than that of even the last half of 1887. This fact is highly encouraging, especially when we consider the very light increase in stocks of unsold iron, which on the 1st of the present month amounted to only 358,273 gross tons, or rather less than a *three weeks' supply*. It is easy to see how suddenly the market may change, and how quickly a "boom" in prices would follow a very moderate increase in the demand. Manufacturers are all carrying very light stocks.

As Mr. Swank remarks: "The very small quantity of pig-iron which is now made in this country with anthracite coal unmixed with any other fuel is a remarkable fact. As late as 1871 we made more pig-iron with anthracite coal than with all other fuels combined."

The production of steel rails shows a decline of 331,123 gross tons over the last half of 1887. This fact has been commented on frequently in our market reports, and was quite expected. The increased consumption of about 100,000 tons of Bessemer steel in other manufactures than rails is a very satisfactory item, and offsets in importance a much larger consumption in rails. As already stated, these statistics are far from unsatisfactory, in fact, they may be considered as extremely favorable when following such a "spurt" as this industry made in 1887.

## AN AUSTRALIAN MINING BOOM COLLAPSING.

Australia is repeating history with a spirit which is akin to American, and promises a future mining experience not unlike our own.

The great Broken Hills silver-lead bonanza, to which we have made frequent reference in these pages, with its 40 to 50 ounce silver-lead ore in enormous quantity, last year created a "boom" of the wildest kind, and values of all sorts of mining property advanced beyond all previous experience in the colony. Every one grew rich over night, and stocks went up like those of the Comstock in the olden days when the wild speculation converted nearly every man, woman and child in San Francisco into a gambler.

It is only three years since the mines first commenced to attract attention, and last year the Broken Hills Proprietary Company produced 66 tons of silver from 8000 tons of lead bullion. It was expected that the company would this year divide $5,000,000 in dividends, but the facts are that the present output from five furnaces is at the rate of about 4,000,000 ounces of silver and 18,000 tons of lead a year, the yield being a little over 40 ounces silver to the ton of ore.

The boom, like so many of our old time Western mining crazes, was based on the phenomenal success of this mine, and for a time the printing of stock of wild-cat enterprises could scarcely keep the public demand supplied.

A change has come, and during the past six months the decline in the

market value of stocks of the Broken Hills companies has amounted to about $40,000,000. In two weeks of May-June the decline was about $8,000,000.

They have some magnificent mines in these Barrier Ranges, else no such "boom" could have been brought about, and no doubt the craze has been worked by the knowing ones "for all it was worth;" in fact, we believe some of the companies imported experienced Comstock "boomers" to show the natives how to do it, and apparently these have learnt the lesson readily, and are likely to repeat more of our Western experience, though we do not think the conditions are such as will reproduce the most disgraceful features of our old Comstock gambling.

## AERIAL ENGINEERING.

That kind of architecture which builds castles in the air has not been considered heretofore a part of the regular profession; but our esteemed contemporary, the *American Architect and Building News*, apparently intends to annex this field. We are more impressed with the originality than with the soundness of its first operations in taking possession. After a learned discussion of the absurd scheme of a cylindrical steel air-ship, to which Congress has recently be asked to give aid (a proposition upon which a favorable report has actually been made by a committee of the House of Representatives), the editor continues :

"The most readily available, however, of all means of locomotion in the air, is that which serves the eagle, the sea-gull and the swallow. So far as we can understand their flight, they progress by simply raising themselves in the air, either by taking advantage of a current, or flapping their wings, and then allowing themselves to slide down again, at an angle which they know how to regulate perfectly by means of their wings and tail. To imitate this with Dr. de Bousset's balloon, we should have to fit it with wings on each side, whose inclination could be nicely regulated. Then, leaving behind all other machinery, we should ascend, with exhausted cylinder, high into the air. By a pull of the valve, air would then be freely admitted to the cylinder, and in a moment we should have, not a structure of uncertain buoyancy, feebly pushing itself along with little puffs of condensed air, but a mass weighing, with its cargo, seven hundred and twenty thousand pounds, drawn downward by the tremendous force of gravitation, resisted, or rather, directed, by the outspread wings. It is not easy to reckon the exact amount of this force; but supposing gravitation to be pulling the balloon toward the earth with a vigor which would cause it to descend, if the tendency were unresisted, at the rate of 16 feet per second, we may fairly say that the whole mass tends to fall vertically with a force of twenty one thousand horse-power. This, then, is the power that the navigator of such a balloon, relieved of its burden of machinery and storage batteries, may command at a touch, in place of the paltry twenty or thirty horse-power which Dr. de Bousset must carry such a cargo to secure. It is true that the effect of gravitation in driving the balloon forward would diminish with the angle which its course made with the earth's surface, but not in a direct ratio; and it may perhaps be safe to say that a balloon like this, rising first in New York to a height of five miles, would travel thence to Liverpool by gravitation with an average force greater than that which Dr. de Bousset's storage-battery would yield him for a single day."

The picture thus presented, of a mass of 720,000 pounds sliding down an airy hypothenuse, with a base of 3000 miles to a perpendicular of five miles, that is to say, so delayed and directed by its wings in falling that it would travel over 3000 miles horizontally while it was descending five miles, is one that takes the breath, not to say "the cake." It is a pity to spoil it with mere terrestrial criticism; but professional jealousy will not permit us to look idly on, under the influence of sentimental admiration, while audacious rivals perform such wonders. We feel our own supply of gravity to be sensibly diminished by this new application of it, in combination with vacuity. Hence we must spitefully make a single remark.

Since the density of the atmosphere at the height of five miles is but 0·376 of its density at sea-level, it follows that the weight of air displaced by the cylinder in question, at that altitude, would be but 300,000 instead of 720,000 pounds. But this is a trifle. We are ashamed to mention it. Let us accept without such small cavils the mass of 720,000 pounds, five miles above the earth. If its fall were unresisted, it would descend to the earth in about 40 seconds. But by the action of its wing-parachutes, it is to be made to go to Liverpool instead. Assuming that it is to travel 100 miles per hour, it must reach the earth in say 30 hours, or 108,000 seconds, instead of 40 seconds. To retard its fall to this extent (assuming a dead calm), the area of the wings would have to be, on a rough calculation, about 5600 million square feet, or say 128,000 acres or 200 square miles. We quite agree with our aerial friend that such wings ought to be "nicely regulated;" even then, we should not care to depend upon them in a high wind; and, on the whole, we think "it may perhaps be safe to say that a balloon like this, rising first in New York to a height of five miles," would not "travel thence to Liverpool" at all. *

## TEXT-BOOKS BY PRACTITIONERS.

Besides the many valuable papers found in the *Transactions* of the American Institute of Mining Engineers, members of that society have enriched our technical literature with a considerable number of elaborate treatises, such as Mr. DRINKER'S book on tunneling, Mr. BOWIE'S on hydraulic mining, those of Dr. E. D. PETERS on copper smelting, and that of Mr. H. M. HOWE on the metallurgy of steel, now in progress of publication in our columns. We select these examples because, like the work by Mr. STETEFELDT, which we notice in another column, they have proceeded from *practitioners*, not *instructors*, and therefore present a peculiar merit, which we might almost call American.

Most text-books of science, theoretical and applied, are made by teachers, and embody the material which has been accumulated in years of reiterated discourse. A professor, explaining a given subject over and over again to successive classes, gradually condenses and arranges what he has to say, until at last his carefully-revised and often-repeated lectures have only to be printed in order to make a text-book. At least, they furnish an adequate outline.

The defect of such books is that they are necessarily compilations. They contain a great deal of obsolete information, and often discuss at great length the details of processes and machines which, having been abandoned by practitioners, deserve no more than a passing mention, for the sake of history, with perhaps an intelligent epitaph, setting forth the time and cause of death. On the other hand, they often contain the crude and untried theories of inventors, gathered from circulars and prospectuses, and added, by the lecturer ambitious to keep up with the times, to his portfolio of progress. Foreign books afford many illustrations of this, in their reproduction of American patented novelties. The new-born respect for American engineering and metallurgy goes so far, that anything American is supposed to be worthy of record as an improvement: and many a device which, when set forth in glowing advertisements, we smile at, and forget, comes back to us in a ponderous octavo from abroad, as one of the ingenious and unexpected products of American invention. Our own professors are free from this glamour, and do not make such ludicrous mistakes; but the tendency of all instructors is necessarily conservatism as to the old, with a touch of over-credulity as to the new.

But practitioners do not usually find the time, possess the skill, or feel the impulse, to write books. The labor is unaccustomed and irksome; the knowledge which they might thus express has never been clearly formulated, even to their own consciousness. In attempting to frame a continuous and logical statement, they come upon gaps which only further study or experiment could supply. They are not sure that what they have observed or devised is new. They are afraid of making themselves ridiculous by betraying ignorance of earlier literature or advanced scientific theory. Obligations of professional duty or opportunities of pecuniary profit prevent them from giving the time, even if they possessed the necessary taste and training to, the making of books.

The influence of our technical schools in this matter has been powerful for good. They have given us a generation of experts who like to *read* and *write*. But this result would not have been effective, had not the technical press and the technical societies—chiefly the ENGINEERING AND MINING JOURNAL and the Institute of Mining Engineers—furnished an appreciative public, quick to recognize and applaud meritorious labors. To such causes we attribute the appearance of text-books by practitioners, in which comprehensiveness is tempered with discrimination, and historic reminiscences, as well as prophetic fancies and suggestions, are condensed or suppressed, to make way for careful descriptions of actual practice, and the theories on which it rests.

We are not concerned to disparage the old-fashioned manuals, but only to point out the peculiar value of this new class, and to express our pleasure in its advent. *

## ELECTRICAL TRANSMISSION OF POWER IN MINING AND METALLURGY.

Never before in the history of the world was progress so rapid or improvement so radical and revolutionizing as at present. The marvels which commenced when FRANKLIN harnessed the lightning and GALVANI discovered voltaic electricity, though illustrated by the electric telegraph and the telephone, have not yet attained the fullness which the future foreshadows. From scarcely more than laboratory curiosities the applications of electricity have grown in magnitude and usefulness until the ingenuity of man is lost in the contemplation of the possibilities this subtile agent may make realities in the near future.

Was the instantaneous transmission of words across the vast expanse of ocean a marvel, and the automatic engraving of the gentlest whisper of the human voice on enduring metal a miracle? Yet who shall say where the limits are of this miracle and where can be drawn the bounds of its influence upon the intellectual and moral progress of the human race.

If the facilities which electricity has afforded for the transmission of intelligence and knowledge have been epoch making, how much grander will be the harnessing of all the powers of nature to do the bidding of man, to lessen his labor and multiply its efficiency, to increase his comforts and promote his happiness. Nature has provided in the sunshine and the wind, in the countless streams and cataracts, in the ceaseless movements of the tides and in the treasured fuel of our gas, petroleum and coal fields all the motive power requisite to supply the wants of man. What alone has been left to human ingenuity is to utilize these forces and convey them economically from the points where they now lie idle

or run to waste and apply them where they can do useful and beneficial service.

Heretofore industries have sprung up around the waterfalls, or more commonly yet have grown where the still expensive coal, or its hydrocarbon cousins, have been obtained at comparatively low cost; but now through that subtile agent, electricity, we are opening up the vista of a new and better era, when the power of the wind and of the water will be carried to a distance through a slender thread of metal, and there be used to turn the wheels of industry, to facilitate the getting of our minerals and metals and fabricate them at so low a cost that it will vastly extend their applications, increasing thereby both the demand for labor and its reward in comfort and well-being.

The mine, so often placed by nature in the rugged and almost inaccessible mountains, where fuel is scarce and transportation laborious, may now be cheaply operated by the aid of the wasted waterfall some scores of miles away.

A few turbine water-wheels driving dynamos transform the idle power into wonder-bearing electricity, which is conveyed in a mysterious manner through a rope of copper wire to the mine, where it can be harnessed to perform the expensive work required in mining operations.

The Union Electric Company, of Philadelphia, has already an electric rotary drill, which is light and easily handled, and bores a hole 6 feet deep in hard anthracite in 90 seconds. While the Sprague Electric Motor Company has gone still further, and, as we are enabled to announce now, for the first time, has perfected a new electric percussion rock drill, that we are told

"Combines the two features of attraction and repulsion, in one and the same motion, and thus cushions at the proper time, to prevent the destructive effects of the percussion upon the drill itself.

"This drill necessitates two circuits from the dynamo, one direct, the other alternating, and requires necessarily a high potential. The excursion can be varied from half an inch to several inches. Its action involves no spark at the point of service, and no commutation whatever."

Pumps and hoisting engines are now driven in many places by electrically transmitted energy, and where necessary, air is compressed, and through it the present admirable rock drills are operated.

The underground as well as surface haulage is now done in many places in this country by electric locomotives. The records of the Lykens Valley colliery in Pennsylvania, where these engines were first used underground in this country, have demonstrated their advantages over the old steam locomotive, which in its turn displaced expensive mule haulage, an immeasurable advance over the ancient human drudgery of "putting."

The Thomson-Houston electric motors have made remarkable records on street roads and electric lightning, and are now competing in the vast field of transmitting energy for mining and metallurgical applications.

From the mine the ore is carried to the mill on tramways, situated as desired, either on the surface or in mid-air, and the snows of winter or the torrents of the tropics can be defied. The mill can be placed where most convenient to the ore, and its many operations may be carried on by separate electric motors, thus securing that uniformity of motion that is essential for efficient concentration.

Nor is it improbable that we shall soon see the energy of the waterfall converted into heat to roast, if not to smelt the ores. For have we not the ingenious Cowles electric smelting of aluminum an established and incontestable success? There seems no limit to the applications which may be made of these economical sources of energy through the medium of this marvel working agent. Its achievements are more incredible than the miracles which stagger faith.

The interest shown in the applications of electrically transmitted power has spread over the entire world, and from its most distant quarters come inquiries concerning the development of this new art in this the recognized home of ingenuity. All eyes are turned towards America to know what our engineers have accomplished in the countless applications of electrical transmission.

Could any testimony to the interest taken in American engineering or to the services which the ENGINEERING AND MINING JOURNAL is performing for our manufacturers and merchants be more eloquent than this brief note which we have received from the Sprague Electric Motor Company:

DEPARTMENT OF MILLS, MINES AND WATER POWER,
SPRAGUE ELECTRIC RAILWAY AND MOTOR COMPANY,
NEW YORK, July 24, 1888.

EDITOR ENGINEERING AND MINING JOURNAL:

DEAR SIR: Upon my desk lie letters from twenty-four of the States of the Union; three of the Canadian Provinces, from Alaska, Australia, New Zealand, England, Portugal, South Africa, the Malay Peninsula, the West Indies, Brazil, Venezuela, the Argentine Republic, Honduras and Mexico, in which reference is made to your JOURNAL as authority for matter quoted, or as advertising the Sprague System of electric transmission of energy, as found in your columns.

It is a very impressive testimony, to my mind, as to the value and extent of your circulation and the authority of your utterances; reminding one of Webster's eloquent allusion to the power, "whose morning drum-beat, following the sun and keeping company with the hours, circles the earth with one continuous and unbroken strain of the martial airs of England." Truly yours, C. W. JENKS.

It is natural, inevitable indeed, that all engaged in electrical science in mining and in metallurgy throughout the world should seek to know what is being done in America, and hence the ENGINEERING AND MINING JOURNAL, which has always been the exponent of American practice in these industries, has become the welcome visitor in the offices of all progressive English reading representatives of mining, metallurgy and engineering in every portion of the known world. This is the compliment the whole world pays to the skill of American engineers and manufacturers.

## CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

### On the Igneous Formation of Silicates and Analogous Salts.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Since my article with this title was published (June 23d) I have received a communication from a distinguished metallurgist, the chief engineer of a prominent basic steel works. He states that he does not doubt the possibility of a primary *pentabasic* phosphate formation since he became satisfied that the *tetrabasic* ($P_2Ca_4O_9$) is the actual outcome of, or ultimate result in, the basic steel slag. But he also emphasizes (what was already known to me from his earlier publications on the same subject) that the silicate of lime of said slag, as it occurs in his practice, is invariably the *bisilicate* ($SiCaO_3$). This latter remark leads me to apprehend that, at a first impression, one of the reactions adduced in the above named article may also be misconstrued by others. I refer to the segregation or reciprocal action of a silicate-phosphate, the *constant* ultimate result of which is: $P_2Ca_4O_9$, and the *conditional*: $Si_3Ca_4O_{10}$. That the latter *is* conditional, should have been rendered plainer by adding another reaction in which the relative molecular quantities of the two salts are favorable to a higher acidity of the silicate, as for instance, in:

$$\left.\begin{array}{l} P_4O_{10}Ca_6O_6\ 1\tfrac{1}{2}:1 \\ +\ \underset{14\ \ 10\ 10}{Si_2O_4Ca_4O_4\ 1\ :1} \end{array}\right\} = \underset{14\ \ 10\ 10}{P_4O_{10}Ca_8O_8\ 1\tfrac{1}{2}:1\ \ Si_2O_4Ca_2O_2\ 2:1} = SiCaO_3.$$

Respectfully.
A. D. ELBERS.

HOBOKEN, N. J., July 24, 1888.

## NEW PUBLICATIONS.

THE LIXIVIATION OF SILVER ORES WITH HYPOSULPHITE SOLUTIONS, *with Special Reference to the Russell Process.* By CARL A. STETEFELDT. New York. Published by the Author, 18 Broadway. 8vo. 233 pages, Contents, Index and Plates.

As we have elsewhere said, this book belongs to the class of text-books by practitioners. Mr. Stetefeldt is one of the ablest of our metallurgists, and this work, the result of much original investigation as well as study, is the first complete treatise on the chemistry and practice of the Russell process. This is what it is, in spite of the more comprehensive title which it bears; for Mr. Stetefeldt's treatment of all other varieties of lixiviation with hyposulphites is confined to a few introductory paragraphs, informing the reader that the processes of Patera and Kiss, Kuestel and Hofman, possess certain defects which the Russell process remedies; and "The Russell Process of Lixiviation, with Incidental Reference," etc., etc., would have been a more descriptive title. It must be confessed, however, that much of the information here collected and discussed would be valuable to those who were operating the earlier hyposulphite lixiviation, if any such should remain extant after duly digesting Mr. Stetefeldt's arguments in favor of the new one.

We desire to praise at the outset the intelligent arrangement of the book, and the care which has been taken to make it convenient for reference. Not only is the subject systematically treated in a logical order, so that the student will find himself prepared for each chapter by the preceding ones, but it is provided with an ample table of contents and an alphabetical index; and besides the division into parts, chapters and various sub-titles, there runs through the volume a simple system of numbering by paragraphs, which we do not recollect having seen in this application before, though its convenience in the numbering of streets and of books in libraries has long been recognized. The paragraphs of the Introduction are numbered from 1 to 100; those of Chapter I., from 101 to 108; those of Chapter II., from 201 to 229; those of Chapter III., from 301, and so on; the figure in the hundreds indicating at a glance the number of the chapter. There are eight chapters in Part I.; but Part II. begins with Chapter XI., so that its first paragraph is numbered 1101; and, accordingly, the last paragraph in the book, No. 1814, tells its own story, showing at a glance that it is the fourteenth paragraph of the eighth chapter of the second part. There could be but one improvement on this: namely, the numbering of the first chapter from 1101 on, instead of from 101. The paragraphs of Part II. would then have begun with 2101, and the number of the part, as well as of the chapter and paragraph, would then have been clearly exhibited. But this is a small matter, and does not touch the chief advantage of such a system, which is, that under it, reference can be made to the book by paragraphs, and thus independently of the edition quoted. The annoyance of being directed to a certain page of a book of which one possesses a later (or an earlier) edition otherwise paged, is familiar to students. This advantage, however, attends any system of numbered paragraphs. The peculiar one here employed goes further. It will permit the author in subsequent editions to insert as much new material as he may desire, without changing the numbers of the paragraphs as they now stand, and thus without affecting the accuracy of any references made to the book by other writers. We heartily approve this arrangement, and hope to see it become general.

Mr. Stetefeldt prides himself somewhat on a uniform use of technical terms. This is, of course, a virtue; but we think he has scarcely a right

to achieve it by arbitrary use of language. Thus when he says that in his pages "leaching" always means the extraction of soluble salts from roasted ores by water, and "lixiviation" refers only to treatment with hyposulphite solutions, he simply creates for his own use a distinction which does not exist between the two terms, as established by the usage of centuries. And this new distinction is no gain to the reader, who is thereby burdened with the necessity of remembering that this author does not attach to the word "lixiviate" the significance given it by mankind, but a narrower one of his own. If, for instance, a statement that leaching would not, but lixiviation *would*, extract a certain salt, should occur in this book, there would be a distinct mental effort required to overcome the first impression of absurdity. Moreover, such arbitrary distinctions do not usually fare well in the hands of their own authors, who are but human, after all, and liable to fall into the ways of other men. Thus we find on p. 56 of this book a comparison of various agents of "lixiviation," comprising simple water and acidulated water, as well as the hyposulphite solutions. "Lixiviation with water!" Such is the fate of those who would reconstruct language.

The invention of new terms is a different matter. Here an author is on his own ground, and while criticism may still be legitimate, it must pursue a different line. We do not know who invented the term "extra-solution" to denote a solution containing cuprous, as well as sodium hyposulphite: but we must confess that we do not find it particularly felicitous. Several names occur to us as better, but we recognize the right of the first settler on this unoccupied spot, and will not attempt to evict him.

Passing from these comparatively trivial matters, we acknowledge with much pleasure the service rendered to metallurgy by this thorough critical examination of every problem involved in the Russell process, and by the frankness and clearness with which the author has in every case stated his own view. As is well-known, the lixiviations of Patera and Kiss were based upon the solubility of silver chloride in solutions of sodium or calcium-hyposulphite, and the precipitation of the silver from such solutions by an alkaline sulphide, with regeneration of the hyposulphites. Mr. Russell's improvement consists chiefly in using a solution of cuprosodic hyposulphite as the lixiviant. (The careless expression, p. 3, line 14, would bear the construction that *cuprous hyposulphite alone* constitutes the "extra-solution." This is obviously not the case; and the slip would be of no consequence at all if it did not happen to be the first definition of the new term given in the book.) The preparation, employment and subsequent treatment of this solution in connection with a great variety of ores opens a field of chemical inquiry worthy of the highest ability and ambition. It is in the exploration of this field that Mr. Stetefeldt has made his most valuable new contribution. The literature of the Russell process is already growing voluminous. Two papers by Mr. Stetefeldt and one very long one by Mr. Ellsworth Daggett and one by Mr. Geo. J. Rockwell, based largely on the experiments of Mr. Russell, might seem to have exhausted the subject for the present; but the truth is that they have left the chemistry of the process obscured with much uncertainty and some error. As Mr. Stetefeldt now confesses, his own first paper of 1884 was, in this respect, crude and incomplete; and the chemistry both of that paper and of Mr. Daggett's will, we presume, be superseded by that of the present manual, wherever it contradicts them.

The Russell extra-solution itself, moreover, is not a definite compound. It may vary in the proportion between the alkaline and the metallic salt; and in fact the reactions of solutions in which this proportion is not the same are entirely different. Again, it is liable to chemical changes under the influence of the atmosphere, of temperature, etc. This opens still another field for investigation and theory. Mr. Stetefeldt's acute and accurate work in this department has produced a complete guide for the operator, enabling him to adapt proportions and manipulations to the conditions presented in each special problem of practice. Some of the demonstrations here given, as, for instance, the discussion, §§ 309–315, of the decomposition of extra solutions on exposure to the atmosphere at ordinary temperatures, are new to chemistry.

Chapter V., on the chemistry of the wash-waters, reviews among other things, the investigations of previous authorities on the solubility of silver chloride in brine and in other chloride solutions, and while accepting the results of Dr. H. Hahn (*Trans.* A. I. M. E.), suggests an explanation, namely, difference in temperature and in degree of concentration, to account for the discrepancy between that chemist, on the one hand, and Vogel, Jackson, etc., on the other.

The scattered observations we have made thus far concern Part I., which is devoted to the chemical side of the subject. Part II., which deals with the practical operation of the process, contains a systematic description of the plant and its management. Here, also, there are novelties worthy of notice. For instance, § 1404 describes and illustrates a proposed apparatus for the precipitation of silver from wash-water; and § 1606, treating of the refining of sulphides, describes a new method which must eventually come into general use. It consists in a muffle-roast of the sulphide-precipitates, which are then placed in a Roessler converter (see Mr. Wendt's paper, *Trans.* A. I. M. E., xii. 274), through which the gases (sulphurous acid, nitrogen, some sulphuric acid, and a surplus of air) from the following roast are passed. The result is to dissolve all the copper, leaving the silver in an insoluble residue, which can be fluxed with borax and melted into bars.

Chapter XV. is a criticism of Mr. Hofmann's proposed method of "Trough-Lixiviation," fully described by its inventor in a recent paper before the Institute of Mining Engineers and in the ENGINEERING AND MINING JOURNAL. Mr. Stetefeldt, like Mr. Daggett, does not believe it will be practically successful.

Chapter XVII. is full of valuable information concerning construction of plant, cost of running, etc.; and chapter XVIII. presents the comparisons with which Mr. Daggett had already made us familiar between the Russell and other processes in actual practice under similar conditions; to which, however, Mr. Stetefeldt adds some recent and very interesting experience from the Ontario mill.

As to the preliminary operations of crushing and roasting, this book says little or nothing. Mr. Stetefeldt's views on these subjects are well known. He believes in rolls as against stamps, and in the Stetefeldt furnace against all creation. But he adds nothing here to the strong reasons he has elsewhere given for his views on these points. His faith in the Russell process, declared several years ago, has been justified by events. That process, while it may not prove to be so widely applicable as its inventor and expounders conceive, has evidently a large field, and has come to stay. It may, therefore, be counted one of the real additions to metallurgy which have been made by American ingenuity and skill. It deserves a representation in technical literature, and Mr. Stetefeldt has given it a worthy one.

## PRODUCTION OF PIG-IRON AND STEEL IN THE UNITED STATES IN 1888.

The American Iron and Steel Association has received from the manufacturers complete statistics of the production of pig-iron, Bessemer steel ingots, and Bessemer steel rails in the United States in the first six months of the present year; also complete statistics of the stocks of unsold pig-iron in the hands of manufacturers or their agents on the 30th day of June last. These statistics are not only complete but they are accurate; they are not "estimated."

TOTAL PRODUCTION OF PIG-IRON.

| States. | Blast furnaces. In blast Jan. 1, 1888. | July 1, 1888. In. | Out. | Total. | Production. Tons of 2000 pounds. (Includes spiegeleisen.) First half of 1887. | Sec'nd half of 1887. | First half of 1888. |
|---|---|---|---|---|---|---|---|
| Maine | 1 | 1 | ..... | 1 | 2,350 | 2,047 | 2,550 |
| Massachusetts | 2 | 2 | 2 | 4 | 5,875 | 5,239 | 7,005 |
| Connecticut | 5 | 4 | 5 | 9 | 10,684 | 11,057 | 10,236 |
| New York | 20 | 15 | 25 | 40 | 137,807 | 158,765 | 134,900 |
| New Jersey | 8 | 6 | 12 | 18 | 106,857 | 65,697 | 50,393 |
| Pennsylvania | 153 | 130 | 110 | 240 | 1,745,796 | 1,938,822 | 1,630,845 |
| Maryland | 3 | 3 | 12 | 15 | 17,127 | 20,300 | 6,250 |
| Virginia | 14 | 12 | 20 | 32 | 81,773 | 93,942 | 92,495 |
| N. Carolina | 1 | 1 | 1 | 2 | 1,400 | 2,240 | 1,100 |
| Georgia | 2 | 2 | 2 | 4 | 23,914 | 17,033 | 23,658 |
| Alabama | 19 | 23 | 10 | 33 | 141,921 | 150,841 | 169,696 |
| Texas | 1 | 1 | ..... | 1 | 1,929 | 2,454 | 2,968 |
| West Virginia | 2 | 1 | 8 | 9 | 32,560 | 49,751 | 45,601 |
| Kentucky | 4 | 6 | 1 | 7 | 24,915 | 16,992 | 21,267 |
| Tennessee | 14 | 14 | 6 | 20 | 119,687 | 130,657 | 122,817 |
| Ohio | 49 | 38 | 38 | 76 | 458,040 | 516,899 | 528,536 |
| Indiana | 2 | 1 | 1 | 2 | 8,710 | 4,501 | 7,300 |
| Illinois | 12 | 7 | 9 | 16 | 251,166 | 314,287 | 204,520 |
| Michigan | 14 | 12 | 15 | 27 | 95,466 | 118,077 | 106,578 |
| Wisconsin | 7 | 6 | 8 | 14 | 64,779 | 68,729 | 51,477 |
| Missouri | 5 | 4 | 8 | 12 | 67,104 | 71,539 | 60,789 |
| Minnesota | ..... | ..... | 1 | 1 | ..... | ..... | ..... |
| Colorado | 1 | 1 | 1 | 2 | 13,164 | 12,127 | 11,522 |
| Oregon | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| California | ..... | ..... | 1 | 1 | ..... | ..... | ..... |
| Wash'n Ty | ..... | ..... | 1 | 1 | 1,586 | ..... | ..... |
| Total pig-iron | 339 | 290 | 297 | 587 | 3,415,210 | 3,771,996 | 3,382,503 |
| Charcoal pig | 74 | 70 | 94 | 164 | 263,428 | 314,754 | 278,238 |
| Coke and bit. pig | 147 | 125 | 103 | 228 | 1,950,339 | 2,320,296 | 2,111,804 |
| Anthracite pig | 118 | 95 | 100 | 195 | 1,201,443 | 1,136,946 | 992,461 |

NOTE.—Much the larger part of the pig-iron classed above as anthracite pig-iron is made with a mixture of anthracite coal and coke as fuel. The quantity of iron made with anthracite alone is steadily growing smaller. In the first half of 1888 it amounted to only 107,802 net tons.

SPIEGELEISEN.—The quantity of spiegeleisen and ferromanganese made in the first half of 1887 was 25,436 net tons; in the second half, 22,162 tons; in the first half of 1888, 21,162 tons.

TOTAL STOCKS OF UNSOLD PIG-IRON.
Tons of 2,000 lbs.

| States. | Dec. 31, 1885. | Dec. 31, 1886. | Dec. 31, 1887. | June 30, 1888. |
|---|---|---|---|---|
| New England | 8,997 | 9,218 | 7,030 | 13,232 |
| New York | 32,796 | 28,202 | 35,019 | 30,038 |
| New Jersey | 4,136 | 1,632 | 22,211 | 20,722 |
| Pennsylvania | 117,209 | 71,202 | 154,175 | 134,883 |
| Maryland | 10,145 | 5,455 | 1,167 | 200 |
| Va., N. C., Ga., and Texas | 31,311 | 13,346 | 6,848 | 21,619 |
| Alabama | 17,693 | 14,025 | 14,248 | 12,792 |
| West Virginia | 4,300 | 4,680 | 4,835 | 1,002 |
| Kentucky | 5,819 | 4,218 | 4,324 | 8,521 |
| Tennessee | 18,667 | 14,488 | 7,726 | 8,150 |
| Ohio | 39,946 | 24,069 | 33,067 | 59,790 |
| Michigan and Indiana | 68,479 | 41,953 | 39,319 | 66,326 |
| Illinois | 3,834 | 300 | ..... | 10,435 |
| Wisconsin | 9,425 | 6,002 | 845 | |
| Missouri | 38,058 | 7,682 | 5,329 | 13,556 |
| Pacific States | 5,707 | 6,232 | 1,159 | ..... |
| Total stocks unsold | 416,512 | 252,704 | 338,142 | 401,266 |
| Anthracite pig | 68,178 | 50,503 | 114,107 | 100,078 |
| Charcoal pig | 232,352 | 131,567 | 96,057 | 134,560 |
| Coke pig | 115,982 | 70,634 | 127,978 | 166,628 |

PRODUCTION OF BESSEMER PIG-IRON.

| | First half of 1887. Net tons. | Second half of 1887. Net tons. | First half of 1888. Net tons. |
|---|---|---|---|
| New York | 15,430 | 47,196 | 18,732 |
| New Jersey | 35,041 | 28,732 | 14,585 |
| Pennsylvania | 863,883 | 978,566 | 746,479 |
| Maryland | 8,238 | 10,235 | ..... |
| West Virginia | 27,946 | 45,124 | 38,557 |
| Tennessee | 8,000 | 3,500 | 2,315 |
| Ohio | 147,403 | 183,741 | 138,828 |
| Illinois | 238,452 | 310,659 | 275,675 |
| Missouri | 59,339 | 63,386 | 54,144 |
| Michigan | ..... | 12,766 | 3,000 |
| Wisconsin | 56,075 | 53,510 | 17,136 |
| Colorado | 12,322 | 10,973 | 10,478 |
| Total | 1,472,129 | 1,748,388 | 1,319,929 |

PRODUCTION OF BESSEMER STEEL INGOTS.
(Clapp-Griffiths ingots included.)

| | | | |
|---|---|---|---|
| Pennsylvania | 911,871 | 840,574 | 729,903 |
| Illinois | 389,784 | 467,729 | 321,115 |
| Other States | 335,917 | 342,482 | 333,180 |
| Total Bessemer ingots | 1,637,572 | 1,650,785 | 1,384,288 |
| Clapp-Griffiths ingots only | 31,043 | 37,636 | 36,070 |

PRODUCTION OF BESSEMER STEEL RAILS.
(Not including steel rails rolled in iron rolling mills.)

| | | | |
|---|---|---|---|
| Pennsylvania | 650,032 | 571,257 | 420,101 |
| Illinois | 323,993 | 404,533 | 256,823 |
| Other States | 170,055 | 170,327 | 98,337 |
| Total Bessemer rails | 1,144,080 | 1,146,117 | 775,261 |

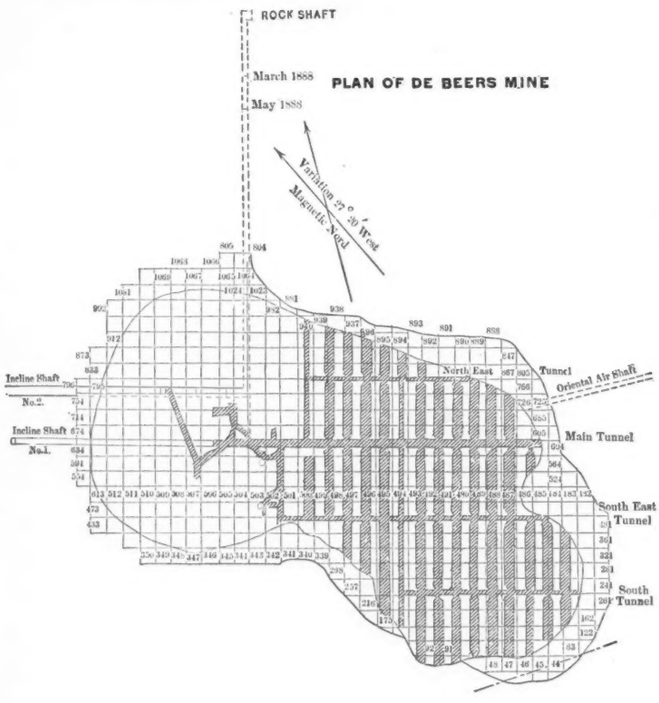
## THE DE BEERS DIAMOND MINE DISASTER.

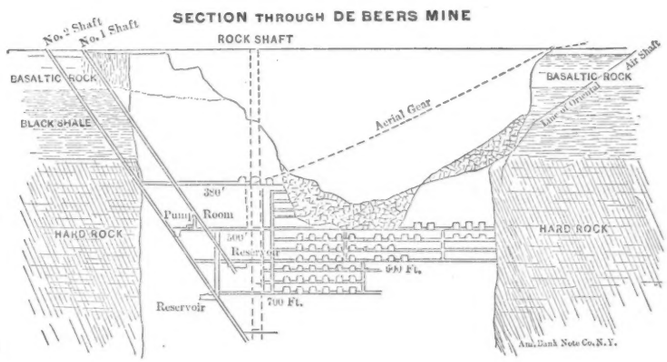
Written for the Engineering and Mining Journal by George F. Kunz.

The recent fire at the De Beers Mine in the South African diamond fields, by which 24 whites and 200 natives perished, as reported in cable dispatches from Cape Town, via London, took place on the night of Wednesday, July 11th, as announced in the ENGINEERING AND MINING JOURNAL of the 14th inst.

According to the first report of the terrible calamity it was that "the De Beers coal mines at Kimberley' had caught fire. The manifest error in regard to the character of the mine was not corrected in subsequent dispatches, but the cause of the fatal fire was explained in this way: "While the shifts were being changed the hauling wire broke and the skip rushed down the shaft with frightful rapidity. The oil lamps were broken, and the blazing fluid quickly ignited the wooden casing of the shaft. Flames in great volume shot up the shaft, completely preventing egress. The mine was soon filled with smoke, and the lights carried by the miners were rendered useless. The panic-striken natives and whites, in their efforts to escape, became massed together in the galleries and were suffocated to death.'

According to the latest official reports, May, 1888, there were employed in the De Beers mine 394 whites and 2758 natives. Of the latter 300 were convicts hired from the Government, at a cost of £58 per annum each. Formerly the natives were allowed to leave the mines, but owing to the fraudulent traffic carried on, 2300 of them were last year impounded. That is, they practically lived in the mines, but are better off than those who have their freedom. They are housed, clothed and fed in barracks provided by the company. The term of contract generally is from one to two months.




The diamond mines are situated in Griqual and West, now a part of Cape Colony, in latitude 28 degrees 40 minutes south, longitude 25 degrees 10 minutes east, about 640 miles northeast of Cape Town and 500 miles from the sea coast. Although it is at an elevation of nearly 4000 feet above the sea level, the heat is excessive during the summer months, when the work is principally carried on.

The minecovers 13½ acres of 610 claims, each 31 feet square, with a road-way of 15 feet between each claim.

The old system of open workings has been to a great extent abandoned for the shaft and underground plan. Under the original method the excavations were carried on to a depth of 500 feet. There were many accidents owing to the falling shale or reef. A rock shaft is now completed to a depth of 841 feet and taps the lower levels. During last year over 21,621 feet of main tunnel were driven. There is one shaft of 791 feet, another of 477 feet, and a third of 125 feet. As many as 18 tribes of natives have been represented in the mines. Some of the natives have been known to tramp a thousand miles to reach the mines, often dying on the way or immediately after arriving at the mines.

The superintendent of the De Beers mine is Mr. Gardner F. Williams, of Oakland, Cal. He went to South Africa on his second trip in the latter part of 1886, and under his efficient management the mine has been rapidly and systematically developed, so that last year the output was the greatest in its history.

The last year, May 1st, 1887, to May 1st, 1888, 890,000 loads of "blue stuff," as the rock is called, were hauled out of the mines, and 850,906 loads yielded 979,732½ carats of diamonds, for which the company received £984,085 14s. 6d. The actual expenditure was £415,188, leaving a profit of £568,897. The De Beers Mine is capitalized at £2,500,620 in ten-pound shares. These were quoted as high as £52 last month, and since have slumped to £30 and advanced again to £39, and are now at £26. This mine now also controls the Central Diamond Mining Company, of the Kimberley mine. It is possible that the recent accident will cause another decline in shares. From September 1st, 1882, to December 31st, 1887, the De Beers mine yielded 3,441,015 carats, valued at £3,450,338, an average of £1 ½d. or $5 per carat. This includes everything taken from the mine, bort, diamond dust, etc. At the beginning, on the top, the mine produced 0·4 carat per load, but as the mining has been carried on at greater depths the yield has been larger. Last year the yield was 0·8 carat per load, a significant increase.

Water flows from the mine at the rate of 5500 gallons per hour, and at the rate of 1200 gallons from the rock shaft. There are nine big washing-machines in use, which are more reliable than the hand or eye. They are so accurate that a diamond the size of a pin-head can not escape.

## HOW ARKANSAS BUBBLES ARE INFLATED AND PRICKED.

For several years past there seems to have been considerable mystery about the ores of the precious metals in Arkansas. Concerning the ore of the so-called "Lost Louisiana mine," Bear Mountain mining district, Montgomery County, Arkansas, there has probably been more mystery in the minds of many people than in any other. This mine, according to local tradition, assisted by the vivid imagination of many rehearsers of the tale, was worked in ancient days by the Spaniards, subsequently lost sight of, and in the last two or three years discovered again by some happy "Arkansas traveler" and prospector.

One peculiarity about the so-called "Lost Louisiana ore" is that in the atmosphere of the State of Arkansas, and through the superior intelligence and skill of assayers and "professors," an average of $50 to the ton of gold has readily been obtained, while in the hands of other well-known assayers in various parts of the country, notably St. Louis, nothing has been obtainable from this dark gray slate rock, which, so far as the samples produced have shown, is not in any respect mineralized.

For the sake of the truth of history and for the protection of the public, the following documents are given, which, with a few words of preface, will explain themselves:

An offer having been kindly made by Arkansas parties to do a little missionary work, and to go outside of the State for the purpose of instructing other assayers in the proper method of assaying this peculiar ore, arrangements were made at the St. Louis Sampling and Testing Works for a complete investigation of the whole subject. On the 27th of April, 1888, a party of Arkansas gentlemen arrived with "Prof." Samuel Aughey and Mr. A. M. Beam, assayers of the Bear Mountain mining district, Arkansas, who had become well known for their ability of obtaining at least $50 a ton in gold from this ore by their method of assay. They brought with them a sack of ore, weighing 46 pounds, which was claimed by them to be "Lost Louisana ore," sampled by themselves. It was arranged that all facilities should be offered "Professor' Aughey and Mr. Beam to make the assays, but under the close observation of Messrs. Thacher and Wheeler of the St. Louis Sampling and Testing Works. It was further agreed that documents should be drawn up stating the simple facts. These documents are as follows:

ST. LOUIS, Mo., May 1, 1888.

This is to certify that I, A. M. Beam, have been experimenting for the past three days on a certain lot of ore from the "Lost Louisiana mine," Bear Mountain mining district, Montgomery County, Arkansas, by the herein below given formulas. After making ten assays with these formulas I have been unable to obtain more than a trace of gold. Every facility was offered for the execution of this work.

Crucible assay: one half A. T. ore, one half A. T. borax glass, one A. T. baking soda, one A. T. test lead, five millegrams silver foil, salt cover. Melt to fusion and add one half A. T. test lead. When in quiet fusion take out of furnace, scorify and cupel.

Gives best results: one half A. T. ore [roasted as before], one half A

T. litharge, one half A. T. soda, one tenth A. T. argol, one tenth A. T. nitrate of ammonia, one-twentieth A. T. chloride of barium. Salt cover. Melt to fusion and add one half A. T. test lead and treat as before. When melted down stir in each case. These are the formulas I have successfully used in Arkansas, and got fifty dollars ($50) per ton.

A. M. BEAM.

Witness: H. M. Rector, Jr., R. M. Luton, H. A. Wheeler, Arthur Thacher.

ST. LOUIS, MO., May 4, 1888.

This is to certify that we, Samuel Aughey and A. M. Beam, on May 2d, 1888, made three assays of the "Lost Louisiana ore," Bear Mountain mining district, Montgomery County, Arkansas, and got only a trace of gold. On May 3d, 1888, we made two assays of the aforesaid sample, and got a trace of gold in No. 1, and 8 ounces of gold per ton in No. 2. On May 4th, 1888, we made four assays of the aforesaid sample and obtained traces of gold in the first three assays, and got eleven and six tenths (11·6) ounces of gold per ton on the fourth assay. We got the result of eight ounces per ton in assay No. 2, May 3d, by the following formula "A:" ½ A. T. ore; 1 A. T. soda; ½ A. T. litharge; 1 gram ammonia nitrate; 1 gram barium chloride; 2½ grams argol; 10 grams potassium cyanide; 5 grams borax; 14 millegrams silver; salt cover; ½ A. T. test lead.

We got the result of the 11·6 ounces gold per ton of assay No. 4, May 4th, 1888, by the following formula "B": One half A. T. ore; ½ A. T. soda; ½ A. T. litharge; 3 grams argol; 1 gram ammonia nitrate; 1 gram barium chloride; 10 grams potassium chloride; 5 grams borax; 10·9 millegrams silver; ½ A. T. lead.

These results we obtained entirely by our own determinations, and they are satisfactory to us. Every facility was afforded us for making these assays.

Signed, SAM'L. AUGHEY.
A. B. BEAM.

Witnesses to signatures: Arthur Thacher, H. M. Rector, Jr., R. M. Luton, C. C. Chapin, H. A. Wheeler.

ST. LOUIS, MO., May 4, 1888.

I hereby certify that I, Arthur Thacher, was present on May 3, 1888, while Prof. Aughey weighed out charge No. 2 and that he omitted to put in the ore.

Signed, ARTHUR THACHER.

Witnesses to signature: R. M. Luton, H. M. Rector, Jr., C. C. Chapin, H. A. Wheeler.

ST. LOUIS, May 4, 1888.

I hereby certify that I, H. A. Wheeler, on May 4, 1888, after Prof. Aughey had roasted his ore sample, changed it for a mixture of iron ore, litharge, soda, coal and charcoal, and I hereby certify that all four assays executed by Prof. Aughey on May 4, 1888, were made from this mixture. That these materials did not contain more than a trace of gold is proved by the result of Prof. Aughey's first three assays.

Signed, H. A. WHEELER.

Witnesses to signature: H. M. Rector, Jr., R. M. Luton, C. C. Chapin, Arthur Thacher.

It will be observed that nineteen assays in all were made by the methods so successfully used elsewhere by Prof. Aughey and Mr. Beam. In only two of these was gold obtained, in assay No. 2 of May 3d, in which 8 ounces were obtained, and assay No. 4 on May 4th, in which 11·6 ounces of gold were obtained. It will also be observed from the statement of Mr. Thacher, that in the former of these two successful assays Prof. Aughey forgot to put in any ore, and that in the latter the charge consisted of iron ore and other barren materials, which had been successfully substituted for the mixture of roasted "Lost Louisana ore," by Mr. Wheeler. Further comment is unnecessary.

## BROMINE VS. CHLORINE FOR GOLD EXTRACTION.

Written for the Engineering and Mining Journal by W. H. Burfeind.

Every one who has worked ores by the Plattner process and has studied its details will acknowledge its chemistry perfect, and that it gives excellent results *if* carefully manipulated on suitable material. However, excellent as it is, this "if" often proves a serious obstacle. The cost of the plant is large. Heavy, bulky and perishable generators are necessary. The vats of a medium sized plant cover a large area. The building containing them must be large. A good deal of expensive tubing is consumed. A large supply of sulphuric acid, manganese and salt must be on hand. The former is very expensive where freights are high. Not only the operator, foreman or superintendent, as he may be called, must thoroughly understand the process, but also the other help must be skilled and trustworthy. Every part of the manipulation must be carefully attended to, or the results will disgust the operator and prove a loss to the owner.

Every one who has worked this process has done something to overcome the objectionable parts, and to those it is due that the process is now used with more success than a few years ago. Küstel, Aaron, Deetkin and others are the most prominent, and it is to be hoped that especially Mr. Aaron will keep on in his good work.

Knowing and encountering the serious objections yet connected with the process led me to experiment with bromine water in place of chlorine gas. I learn that several gentlemen have experimented with it, and I shall be pleased to learn to what conclusion they have come.

I will demonstrate my views by giving a method for assaying gold ores with bromine water. The chemistry of this method is exactly that given by Plattner. I simply employ bromine in place of chlorine as a solvent. The operation is as follows:

### BROMINE ASSAY OF GOLD ORES.

Weigh out the material, more or less according to richness, roast, with or without salt if sulphides are present, put it into any kind of a bottle which will hold about one third more than the quantity to be treated (a one half gallon acid bottle will answer well for three or four pounds material), then add bromine water of any strength so that it will stand an inch or two over the ore, cork the bottle and shake well for a short time, let stand about an hour, giving it an occasional shake. If the gold is not too coarse and there is by this time still free bromine in the bottle the solution is complete, otherwise more bromine water must be added and additional time given. Pour the contents of the bottle into a filter, wash thoroughly with cold water until the wash water is not any more darkened by a solution of ferrous sulphate, best seen in a porcelain evaporating dish. Treat the filtrate in the same manner as if chlorine gas had been used.

All that is necessary for this test is a bottle and bromine water; both are found in every laboratory. Gas generator with tubing and receiver are superfluous. The ore cannot be put in too wet or too dry, there is no danger of packing it too tight or uneven, but it can be put into the bottle promiscuously, wet or dry. By shaking it with the bromine water every particle of it will come into contact with the bromine. The "occasional shake" offers a fresh, bright surface to the bromine, which saves time in all cases, but is of special benefit if the gold is alloyed with quite an amount of silver. (Being once in a hurry to determine the gold left in the tailings, I simply shook a small amount of ore with bromine water for 10 minutes, filtered it off, and found only a trace just visible from a $150 ore.) No unpleasant gases fill the laboratory if the filtering is done under a hood. The presence of free bromine is as easily detected as that of free chlorine. It is also a sign that enough has been added. The operator, if working on one kind of material, will soon know the exact amount of bromine necessary.

The time consumed is less, results will agree to a nicety with the most carefully manipulated test made with chlorine gas; and what is best, skillful manipulations do not enter into any part of the process. It can, therefore, be executed by any assistant.

A good many of the above advantages are obtained if bromine water is used in place of chlorine gas on a large scale. A series of tests made on a large scale verified my conclusion; but I am not in a position to test this as fully as I would like.

The main objection to using bromine on a large scale is the danger in shipping and handling large quantities of it, and, I may add, that this is the only one under a good many circumstances. I must confess that I am at a loss to overcome this last and main trouble. To ship it in the shape of bromides will not answer, as it destroys all the advantages offered. It has occurred to me that it might be possible that it can be shipped as nitro-glycerine in an absorbent. I have not at present the convenience to follow this up, and should be pleased to learn that parties interested in the manufacture of bromine have already discovered a suitable method. As soon as bromine can be handled and shipped without danger, it will be used very extensively in the Western mining region.

**An electric drill** weighing 100 pounds and that makes a hole three feet deep in hard anthracite in 30 seconds and one six feet deep in 1½ minutes is the latest thing in electric drilling machines. It is designed by Mr. W. M. Schlesinger and made by the Union Electric Company, of Philadelphia.

**Aliens and Mineral Lands.**—Representative Hermann, of Oregon, from the Committee on Public Lands, has reported July 24th favorably to the House the Senate bill providing that the Alien Land act shall not affect the title to mineral or mining claims in the territories which may be acquired or held under the mineral laws of the United States.

**Recovery of Sulphur from Residues of Leblanc Process.**—MM. Miller and Opl propose to recover the sulphur and lime lost in the Leblanc process, in the following way: The residues are treated with sulphureted hydrogen, which converts the sulphide of calcium into the soluble sulphohydride. This is dissolved in water, heated gently, when the sulphureted hydrogen is given off, and the calcic hydrate precipitated. The sulphureted hydrogen may be easily collected in a gasometer and used as before, or may be burned to sulphurous acid and condensed in lead chambers. This process claims to recover all the sulphur in the residues.

**Compulsory Insurance of Workmen in Germany.**—A bill making provision for workpeople who become incapacitated by age or illness, which has been drawn up by the Committee of the Federal Council, provides for compulsory insurance, the funds for which are to be raised in three parts, one part to be contributed by the Empire by means of assessment, the second part by premiums to be paid by the employers of labor, and the remaining share by contributions from the employed, men paying 21 pfennige (5c.), and women 14 pfennige 3 1-5c.) per week. Every man on becoming invalided will receive an allowance of 120 marks ($30), and every woman 80 marks ($20), while the pension of aged working people will commence at the age of 71 with an allowance of 180 marks ($45) a year.

**Large Mining Pump.**—What is probably to be the largest mining pump in this country if not in the world is at present in process of construction at the Builders' Iron Foundry, Providence, R. I., for the Calumet & Hecla Mining Company, of Michigan. The water plungers are 34 by 48 inches, and the pump will have a daily capacity of 25,000,000 gallons. The weight of the pump and stand complete will be 172 tons, the heaviest section, of which there are twelve, being 22 tons. The castings are made of gun metal, and are cast in open baths. It will be transported to its destination in sections. This is but little larger than "The President," operated by the Lehigh Zinc Company, at Friedensville, Pa., which had a daily capacity of 24,480,000 gallons. A full description of this pump will be found in the ENGINEERING AND MINING JOURNAL, August 29th, 1871.

**Compressed Paper for Axle Box Bearings.**—Experiments are being made on Prussian railways with axle boxes fitted with bearings of vegetable parchment in place of brass. The parchment is strongly compressed before being used, and it is thoroughly dried to prevent subsequent shrinkage. Wooden rings are placed on the outside of the bearings, fitting the collars of the journal. An emulsion of water and oil and all the mineral oils are used as lubricants. The parchment soon becomes impregnated with oil and is able to go a long time without a renewal of lubrication. It is between the body of the journal and the thin edge of the parchment segments that friction takes place. The claim is made that the compressed paper bearings make a tough material that is superior to metal. Such bearings are also in use in a German sawmill, with satisfactory operation.

## THE SPRAGUE ELECTRIC AERIAL TRAMWAY.

The accompanying illustrations show a novel system of electrical aerial tramway, in which the motive energy is carried through the suspending cable from the dynamo, and drives on the car or bucket a motor that turns, through gearing, the wheels which run on the suspending rope.

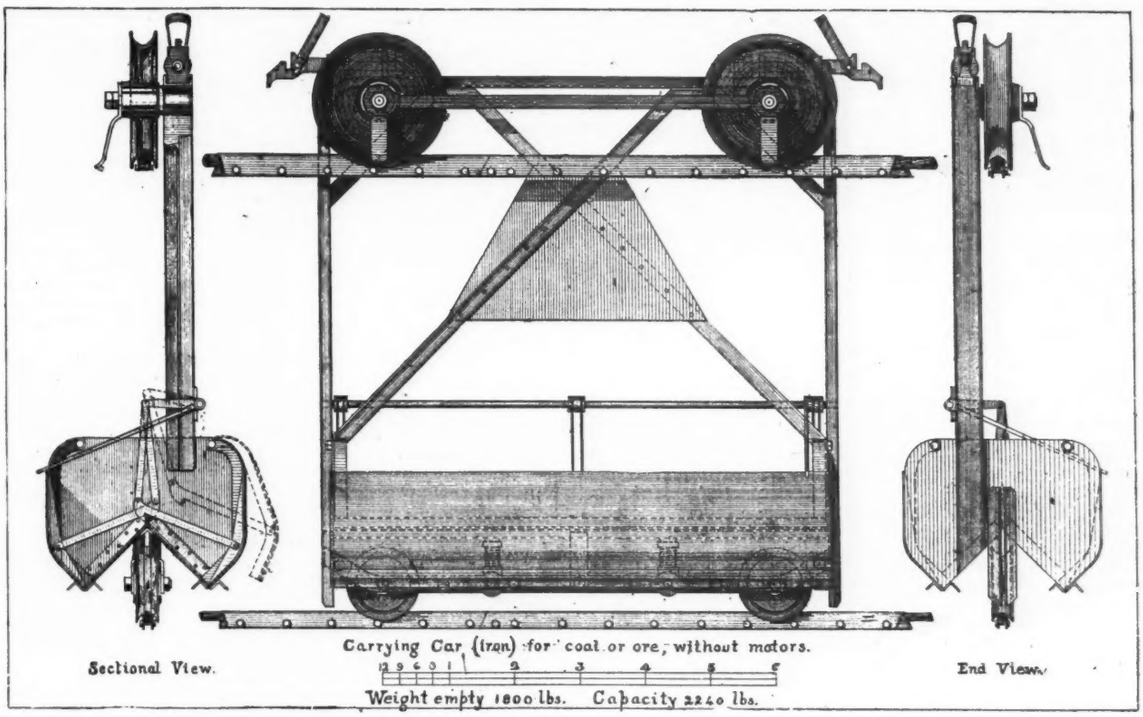
The accompanying illustrations show the details of this novel aerial tramway as now offered by the Sprague Electric Railway and Motor Company. The success of the Sprague electric motors on street railways has been remarkable, that at Richmond, Va., is a difficult example, and concerning this the following figures are published:

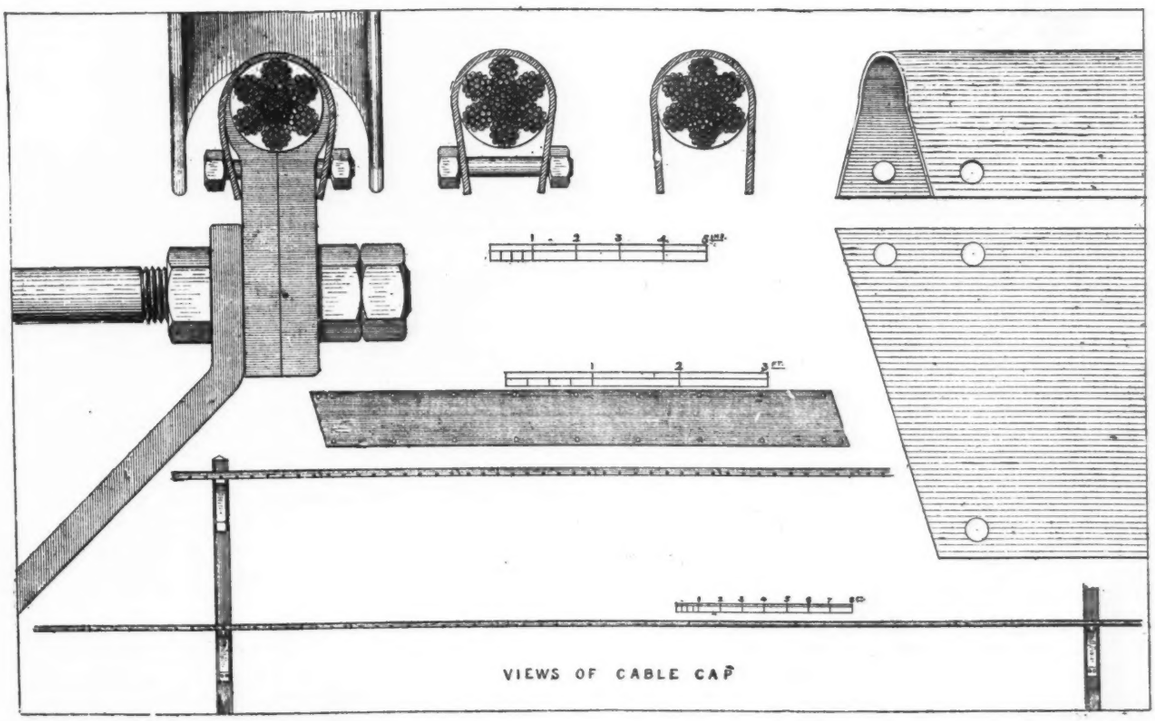
"The total trackage is 12 miles. Streets covered, 9 miles. Maximum grade, 10 1-10 per cent. Longest grade is 5600 feet, varying from 2 to 8 per cent. The curves are 29 in number; such as 27-foot radius with 5 per cent grade; 40-foot radius with 8½ per cent grade, etc. Twelve miles of the road are now operated, being the heaviest part, with about a mile of up grade each way. Total equipment is 40 cars. Thirty cars are now in operation. Twenty of these are full-sized 16-foot closed cars, and ten are 22-foot open cars. The present mileage of 1500 to 1800 miles on these grades would require not less than 225 to 250 horses.

"The entire operating expenses chargeable at the central station for thirty cars, with the present mileage, on the heaviest section of the track, is only 1¼ cents per car mile. This includes electrician, engineers, firemen, dynamo men, all coal, oil, waste, water, lighting and depreciation: the working force being, with the exception of one man, sufficient to handle forty cars. When the forty cars are in operation the expense will be reduced to about 1¼ cents per car mile run.

"The total operating expenses, including everything, are now only 40 per cent of the receipts."

This example is an indication of what may be accomplished in mine transportation, and we shall await with great interest the figures attained by the new system of aerial tramways.



## MINERAL STATISTICS OF THE UNITED STATES IN 1887.

We omit the details of such statistics of metals as have been already published in the ENGINEERING AND MINING JOURNAL in greater detail. Thus *iron* in ENGINEERING AND MINING JOURNAL January, May 12th, 1888. Gold and silver, the statistics collected by the mint were published in our last issue July 21st, 1888.

Copper, lead, and zinc, see ENGINEERING AND MINING JOURNAL, January 7th, also April 7th and 21st, 1888.

Quicksilver, ENGINEERING AND MINING JOURNAL, February 11th, 1888.

Coal and coke statistics given in detail, ENGINEERING AND MINING JOURNAL, June 16th, 1888.

*Copper.*—Total production 184,670,524 pounds, of which 3,750,000 pounds were made from imported pyrites. The total value was $21,052,440, at an average of 11·4 cents per pound. The estimated total consumption of copper in the United States increased by about 14 per cent.

*Lead.*—The production of lead was 160,700 short tons, valued at $14,463,000 at $90 per short ton. The heavy increase of "desilverized" lead from 114,829 short tons in 1886 to 135,552 in 1887 was probably due to the importation of Mexican lead-silver ores. The large product of non-argentiferous lead, 25,148 short tons, is due chiefly to the development of the Saint Joe district in Missouri. The production of white lead and the several oxides from pig-lead increased to a total of about 75,000 short tons.

*Zinc.*—The producers' returns show an increase from 42,641 short tons in 1886 to 50,340 in 1887. The price increased to 4¾ cents per pound, making the total value in 1887 $4,782,300. The production of zinc oxide was practically steady at 18,000 short tons, valued at $1,440,000.

*Quicksilver.*—Production and value increased from 29,981 flasks, valued at $1,060,000, to 33,825 flasks, valued at $1,429,000. Except 65 flasks from Oregon the total supply came from California. The price in 1887 varied from $36.50 to $48 per flask in San Francisco.

*Nickel.*—The supply includes 183,125 pounds of metallic nickel, valued at $117,200, 10,846 pounds of metallic nickel contained in matte, and 11,595 pounds contained in nickel ammonium sulphate. Total value, $133,200.

*Cobalt Oxide.*—The product includes 5769 pounds of cobalt oxide for potter's use and 12,571 pounds of oxide in matte exported to Europe. Total value, $18,774.

*Chromium.*—Shipments from California increased to 3000 tons on account of better freight facilities by rail to the Eastern States. The total value in San Francisco was $40,000.

*Manganese.*—The total production of manganese ore in the year ending December 31st, 1887, was 34,524 tons, valued at $333,844. The production of manganiferous iron ore was 211,751 tons, valued at about $600,000. The production of argentiferous manganese ores was 60,000 tons, valued chiefly for its silver, at about $600,000.

*Antimony.*—The production, all in California, was 75 tons, valued at $15,500. This is an increase from 35 tons in 1886, valued at $7000.

*Aluminum.*—The production of aluminum bronze containing 10 per cent aluminum increased to 144,764 pounds in 1887, valued at $57,905. Other alloys principally of iron and aluminum amounted to 42,617 pounds, worth $17,000.

*Platinum.*—Considerable search by dealers produced 448 ounces of crude platinum, valued at $1838. Part of this came from British Columbia.

*Coke.*—The total production of coke in the United States for the year ending December 31st, 1887, was 7,857,487 short tons, valued at $15,723,574. This is the greatest product ever reached in the United States, being 1,022,419 tons greater than in 1886.

*Petroleum.*—Total production 28,249,543 barrels of 42 gallons each. The total value at an average of 60 cents was $16,949,726. The increase over 1886 was very slight, only 139,428 barrels. There was a decrease of 11½ cents per barrel in the average price.

*Natural Gas.*—The production of natural gas in the United States in 1887 was equivalent to 9,055,000 short tons of coal displaced. This, at an average value of $1.50 a ton, would make the value of the coal displaced by natural gas (which is the measure of the value of the gas) $13,582,500. In 1886 the corresponding quantity was 6,353,000 tons, worth $9,847,150.

*Building Stone.*—Direct returns from producers show a total value of $25,000,000. This marked increase shows that the statement for 1886 was too small.

*Brick and Tile.*—Value $40,000,000. This represents an increase of about 13 per cent in the production of brick and a decrease in tile, owing to the drouth in 1887 in Indiana and Ohio. Prices were slightly lower.

*Lime.*—The production is estimated at 46,750,000 barrels, with an average value of 50 cents per barrel.

*Cement.*—The production of cement from natural rock was 6,692,744 barrels, valued at 77½ cents per barrel, making $5,186,877 as the value of the year's product.

*Buhrstones.*—The value of the total product is estimated at $200,000.

*Grindstones.*—In Ohio and Michigan, 37,400 tons were produced, valued at $224,400.

*Corundum.*—Total production from North Carolina and Georgia, 600 short tons, with a spot value of $108.000.

*Hovaculite.*—Production, 1,200,000 pounds, valued in the rough state at $16,000.

*Infusorial Earth.*—Maryland produced 3000 tons, worth $15,000.

*Precious Stones.*—The value of American gems in the rough state amounted to $88,600, besides gold quartz for specimens and gems, valued at $75,000.

### MINERAL PRODUCTS OF THE UNITED STATES. 1882 to 1886.

| | 1882. | | 1883. | | 1884. | | 1885. | | 1886. | | 1887. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Quantity. | Value. Dollars. | Quantity. | Value. Dollars. | Quantity. | Value. Dollars. | Quantity. | Value. Dollars. | Quantity. | Value. Dollars. | Quantity. | Value. Dollars. |
| **Metallic.** | | | | | | | | | | | | |
| Pig-iron, spot value.....long tons | 4,623,323 | 106,336,429 | 4,595,510 | 91,910,200 | 4,097,868 | 73,761,624 | 4,044,525 | 64,712,400 | 5,683,329 | 93,195,760 | 6,417,148 | 121,925,800 |
| Silver, coining value.....troy oz. | 36,197,695 | 46,800,000 | 35,733 622 | 46,200,000 | 37,744,605 | 48,800,000 | 39,910,279 | 51,600,000 | 39,445,312 | 51,000,000 | 41,269,240 | 53,441,300 |
| Gold, coining value..... " | 1,572,186 | 32,500,000 | 1,451,249 | 30,000,000 | 1,489,949 | 30,800,000 | 1,538,376 | 31 801,000 | 1,881,250 | 35,000,000 | 1,596,500 | 33,100,000 |
| Copper (value, New York) .....lbs. | 91,646,232 | 16,038,091 | 117,151,795 | 18,064,807 | 147,805.407 | 18,106,162 | 170,962 607 | 18,292,999 | 161,235,381 | 16,527,651 | 184,670.524 | 21,052,440 |
| Lead " " " " short tons | 132.890 | 12.624,550 | 143 957 | 12,322,719 | 139,897 | 10,537,042 | 129,412 | 10,469,431 | 135.629 | 12,667,749 | 160,700 | 14,463,000 |
| Zinc " " " " | 33 765 | 3,646,620 | 36,872 | 3,311,106 | 38,544 | 3,422,707 | 40,688 | 3,539,856 | 42,641 | 3.752,408 | 50,340 | 4,782,300 |
| Quicksilver (at San Francisco) flasks | 52,732 | 1,487.042 | 46,725 | 1,253,632 | 31,913 | 936,327 | 32,073 | 979,189 | 29,981 | 1,060,000 | 33,825 | 1,423,000 |
| Nickel (at New York).....lbs | 281,616 | 309,777 | 58,800 | 52,920 | 64,550 | 48,412 | 277,904 | 191,753 | 214,992 | 127.157 | 205,5 6 | 133,200 |
| Antimony (at New York) short tons | 60 | 2,000 | 60 | 12,000 | 60 | 12,000 | 50 | 10,000 | 35 | 7,000 | 75 | 15,500 |
| Platinum (crude, at N. Y.)..troy oz. | 200 | 600 | 200 | 600 | 150 | 450 | 250 | 187 | 50 | 100 | 448 | 1,838 |
| Aluminum (at New York)... " | ..... | ..... | 1,000 | 875 | 1,800 | 1,350 | 3,400 | 2,550 | ..... | 27,000 | ..... | 74,905 |
| Total metallic products..... | ..... | 219,755,109 | ..... | 203,128,859 | ..... | 186,426,074 | ..... | 181,599,365 | ..... | 215,364,825 | ..... | 250,419,283 |
| **Non-metallic (Spot Values).** | | | | | | | | | | | | |
| Bituminous coal.....long tons | 60,861,190 | 76,076,487 | 68,531,500 | 82,237,800 | 73,730,539 | 77,417,066 | 64,840,668 | 82,347,648 | 65,810,676 | 78,481,056 | 78,426,214 | 97,939,656 |
| Anthracite..... " | 31,358.264 | 70,556,094 | 34,336,469 | 77,257,055 | 33.175,756 | 66,351.512 | 34,228,548 | 76,671.948 | 34,853,077 | 76,119,120 | 37,578,747 | 84,552,181 |
| Petroleum.....barrels | 30,053,500 | 23,704,698 | 23,400,229 | 25,740,252 | 24,089,758 | 20,476,294 | 21,842,041 | 19,193.694 | 28,110.115 | 20,028,457 | 28,249,545 | 16,949,726 |
| Lime..... " | 31,000,000 | 21,700,000 | 32,000,000 | 19,200.000 | 37,000,000 | 18,500,000 | 40,000,000 | 20,000,000 | 42,500,000 | 21,250,000 | 46,750,000 | 23,375,000 |
| Building stone..... | ..... | 21,000,000 | ..... | 20,000,000 | ..... | 19,000,000 | ..... | 19,000,000 | ..... | 19,000,000 | ..... | 25,000,000 |
| Salt.....barrels | 6,412,373 | 4,340,140 | 6,192,231 | 4,211.042 | 6,514,937 | 4,197,734 | 7,038,653 | 4,825,345 | 7,707.081 | 4,736,585 | 7,831.962 | 4,993,846 |
| Cement..... " | 3,250,000 | 3,372.750 | 4,190,000 | 4,293,500 | 4,000,000 | 3,720,000 | 4,150,000 | 3,492.500 | 4,500,000 | 3,990,000 | 6,692.744 | 5,186,877 |
| Limestone for iron flux..long tons | 3,850,000 | 2,310,000 | 3,814,273 | 1,907,136 | 3,401,930 | 1,709,965 | 3,356,956 | 1,678,478 | 4,717,163 | 2,830,297 | 5,377.000 | 3,226,200 |
| Phosphate rock ..... " | 332,077 | 1,992,462 | 378,380 | 2,270 280 | 431,779 | 2,374,784 | 437.856 | 2,846.004 | 430,549 | 1,872.936 | 480,558 | 1,836,818 |
| New Jersey marls.....short tons | 1,080,000 | 540,000 | 972,000 | 486,000 | 875,000 | 437,500 | 875,000 | 437,500 | 800,000 | 400,000 | 600,000 | 300,000 |
| Borax.....lbs. | 4,236.291 | 338,903 | 6,500,000 | 585,000 | 7,000,000 | 490,000 | 8,000,000 | 480,000 | 9,778,290 | 488,915 | 11,000,000 | 550,000 |
| Mica..... " | 100,000 | 250,000 | 114.000 | 285,000 | 147,410 | 368,525 | 92.000 | 161,000 | 40.000 | 70,000 | 70,500 | 142,250 |
| Ocher.....long tons | 7.000 | 105.000 | 7,000 | 84,000 | 7.000 | 84.000 | 3,950 | 43,575 | 15,800 | 285,000 | 20,000 | 310,000 |
| Crude barytes..... " | 20,000 | 80,000 | 27,000 | 108,000 | 25,000 | 100,000 | 15,000 | 75,000 | 10,000 | 50 000 | 15,000 | 75,000 |
| Precious stones..... | ..... | 75,000 | ..... | 74,050 | ..... | 82,975 | ..... | 69,900 | ..... | 79,056 | ..... | 88,600 |
| Gold quartz jewelry ..... | ..... | 75,000 | ..... | 115,000 | ..... | 140.000 | ..... | 140.000 | ..... | 40,000 | ..... | 75.000 |
| Pyrites.....long tons | 12,000 | 72,000 | 25,000 | 137,500 | 35,090 | 175,000 | 49,000 | 220,500 | 55,000 | 247,500 | 52,500 | 210,000 |
| Manganese ore..... " | 3,500 | 52,500 | 8,000 | 120,000 | 10,000 | 120,000 | 23,258 | 190,281 | 30.193 | 277,636 | 34,524 | 333,844 |
| Chrome iron ore..... " | 2,500 | 50,000 | 3,000 | 60,000 | 2,000 | 35,000 | 2,700 | 40,000 | 2,000 | 30,000 | 3,000 | 40,000 |
| Asbestos.....short tons | 1,200 | 36,000 | 1,000 | 30,000 | 1,000 | 30,000 | 300 | 9,000 | 200 | 6,000 | 150 | 4,500 |
| Graphite .....lbs. | 425,000 | 34,000 | 575,000 | 46,000 | ..... | ..... | 327,883 | 28,231 | 415,525 | 33,242 | 416,000 | 34,000 |
| Cobalt oxide..... " | 11.653 | 32,046 | 1,096 | 2,795 | 2,000 | 5,100 | 68,723 | 65,373 | ..... | 36,878 | 18 340 | 18,774 |
| Slate pigment.....long tons | 2,000 | 24,000 | 2,000 | 24,000 | 2,000 | 20,000 | 1,975 | 24,687 | 3,000 | 30,000 | 2,000 | 20,000 |
| Sulphur.....short tons | 600 | 21,000 | 1,000 | 27,000 | 500 | 12,000 | 715 | 17,875 | 2,500 | 75,000 | 3,000 | 100,000 |
| Asphaltum..... " | 3,000 | 10,500 | 3,000 | 10,500 | 3,000 | 10,500 | 3,000 | 10,500 | 3,500 | 14,000 | 4,000 | 16,000 |
| Corundum..... " | 500 | 80,000 | 550 | 100,000 | 600 | 108,000 | 600 | 108,000 | 645 | 116,190 | 600 | 108,000 |
| Feldspar.....long tons | 14,000 | 70,000 | 14,100 | 71,112 | 10,900 | 55,112 | 13,600 | 68,000 | 14,900 | 74,500 | 10,200 | 56,100 |
| Zinc-white.....short tons | 10,000 | 700.000 | 12,000 | 840,000 | 13,000 | 910,000 | 15,000 | 1,050,000 | 18,000 | 1,440,000 | 18,000 | 1,440,000 |
| Bromine.....lbs. | 250,000 | 75,000 | 301,100 | 72.264 | 281,100 | 67,464 | 310,000 | 89,900 | 428,334 | 141.350 | 199,087 | 61,717 |
| Mineral waters.....gallons sold | ..... | ..... | 7,529,423 | 1,119,603 | 10,215,328 | 1,459,143 | 9,148,401 | 1,312,845 | 8,950,317 | 1,284,070 | 8,259,609 | 1,261,473 |
| Natural gas..... | ..... | 215,000 | ..... | 475,000 | ..... | 1,460,000 | ..... | 4,854,200 | ..... | 9,847,150 | ..... | 13,582,500 |
| Gypsum.....short tons | ..... | ..... | ..... | ..... | ..... | ..... | 90,405 | 405,000 | 95,250 | 428.625 | 95,000 | 425,000 |
| Flint.....long tons | 25,000 | 100.000 | 25,000 | 100.000 | 30,000 | 120.000 | 30,000 | 120 000 | 30,000 | 120,000 | 32,000 | 185,000 |
| Fluorspar.....short tons | 4,000 | 20,000 | 4,000 | 20,000 | 4,000 | 20,000 | 5,000 | 22,500 | 5,000 | 22,500 | 5.00 | 20,000 |
| Novaculite.....lbs. | ..... | ..... | ..... | ..... | ..... | ..... | 1,000,000 | 15,000 | 1,160,000 | 15,000 | 1,200,000 | 16,000 |
| Rutile.....lbs. | 500 | 1,800 | 550 | 2,000 | 600 | 2,000 | 600 | 2,000 | 600 | 2,000 | 1.000 | 3,000 |
| Total non-metallic products..... | ..... | 228,410,380 | ..... | 242,111,889 | ..... | 220,050,674 | ..... | 240,114,544 | ..... | 243,963,063 | ..... | 281,657,062 |
| Total metallic products..... | ..... | 219,755,109 | ..... | 203,128,859 | ..... | 186,426,074 | ..... | 181,599,365 | ..... | 215,364,825 | ..... | 250,419,283 |
| Unspecified mineral products, est.. | ..... | 8,000,000 | ..... | 8,000,000 | ..... | 7,000,000 | ..... | 7,000,000 | ..... | 6,000,000 | ..... | 6,000,000 |
| Grand total..... | ..... | 456,165,489 | ..... | 453,240,748 | ..... | 413,476,748 | ..... | 428,713,909 | ..... | 465,327,888 | ..... | 538,076,345 |

Long tons are tons of 2240 avoirdupois pounds, "short" tons are 2000 pounds. "Coining value" is $1.2929 per troy ounce for silver, and $20.6718 per troy ounce for gold.

The flask of quicksilver is 76½ pounds, the barrel of petroleum contains 42 U. S. gallons, the barrel of lime contains 200 pounds, the barrel of salt contains 280 pounds, the barrel of common cement contains 300 pounds, the barrel of Portland cement contains 400 pounds.

No pure metallic aluminum was produced in the United States in 1887. The value given is for the aluminum in alloys.

"Unspecified mineral products" includes, except where an amount is specified in the table, fire-clay, kaolin, potter's clay, common brick clay, terra cotta, building sand, glass sand, limestone used as flux in lead smelting, limestone in glass making, iron ore used as flux in lead smelting, marls (other than New Jersey), gypsum, tin ore, iridosmine, mill buhrstone and stone for making grindstones, novaculite, lithographic stone, talc and soapstone, quartz, nitrate of soda, carbonate of soda, sulphate of soda, native alum, ozocerite, mineral soap, strontia, infusorial earth and tripoli, pumice-stone, sienna, umber, zinc-white, and minera waters

*Phosphate Rock.*—South Carolina phosphate rock 480,558 long tons, valued at $1,836,818, an increase of 50,009 tons, but a decrease of $36,118 in the value, due to greater competition reducing the price to $3.75 for land and $4 for river rock.

*Marls.*—In New Jersey the production is estimated at 600,000 tons, worth about $300,000. While the New Jersey marl is yielding slowly to commercial fertilizers, the Virginia marls, as well as those in North and South Carolina, Georgia, Mississippi and Florida, are finding increased local use.

*Salt.*—Production in 1887, 7,831,962 barrels (of 280 pounds); value, $4,093,846. The annual production has increased each year since 1883, but the total value has declined, being less in 1887 than in 1884, although only 6,514,937 barrels were made in that year.

*Bromine.*—Stocks accumulated in 1886 and reduced the output of 1887 to 199,087 pounds, valued at $61,717. The price was held at 31 cents per pound.

*Borax.*—Production 11,000,000 pounds, all from California and Nevada. Total value, $550,000, at 5 cents per pound for the average grade. The price was rising at the close of 1887.

*Sulphur.*—Production about 3000 tons, from Utah, worth $100,000. Litigation checked the use of an increased plant. The imports of Sicilian sulphur, with small shipments from Japan, were 98,882 long tons, valued at $1,688,360.

*Pyrites.*—Production 52,500 long tons, valued at $210,000 at $4 per ton at the mines.

*Barytes.*—The production increased to 15,000 long tons of crude barytes, valued at $75,000 at the mines.

*Gypsum.*—The condition of the industry is practically unchanged. The estimated total product was 95,000 short tons of crude gypsum, valued at $425,000. In addition, 162,154 long tons of crude gypsum were imported, chiefly from Nova Scotia.

*Mica.*—The production increased to 70,500 pounds, valued at $142,250. The increase was chiefly in North Carolina. New Hampshire, Massachusetts and Virginia also produced mica. No shipments were reported from the Black Hills or New Mexico. The use of mica waste is increasing; 2000 tons, worth $15,000, were ground in 1887.

*Feldspar.*—The amount consumed, principally by potters, was 10,200 long tons, valued at $56,100 before grinding. This includes freight to the principal markets, Trenton or New York. The consumption in 1886 was about 5000 tons less than the production returned by quarrymen.

*Flint.*—For pottery 19,800 tons were used. Including the use for sandpaper and in glass manufacture, the total consumption was about 32,000 tons, worth, unground, $185,000.

*Potters' Clay.*—The consumption of kaolin and ball clay by potters aggregated 28,000 tons, valued at $290,000. In addition, the potters used 15,000 tons of fire clay, worth $50,000.

*Asbestos.*—The total product hardly exceeded 150 tons, worth $4500. In addition, several hundred tons of fibrous actinolite were used for weighting paper.

*Mineral Paints.*—Including ocher, metallic paints and small quantities of umber and sienna, the production amounted to 20,000 long tons, selling for $310,000 at the mines.

*Graphite.*—The production at Ticonderoga is reported as unchanged. Small lots ranging from graphitic clay to pure graphite were produced in North Carolina. Total production, 416,000 pounds, worth $34,000.

*Fluorspar.*—The production remained constant at 5000 tons in Indiana, The total value was $20,000.

*Mineral Waters.*—The product which was sold amounted to 8,259,609 gallons, worth $1,261,473.

---

**The** Treasury Department has decided that mineralogical specimens, such as are used in cabinet collections and in class-rooms, are entitled to free entry under the provisions of the free list for "crude materials."

**Canadian-Australian Submarine Cable.**—The total distance to be covered by the proposed Pacific cable between Vancouver, Hawaii, the Fanning and Fiji islands, New Zealand, and Australia is 6800 miles, but the longest single stretch of submarine cable is not to be over 2000 miles.

**Flash Photographs of Underground Workings.**—In connection with the Geological Survey of Pennsylvania, photographs are being taken in various mines by means of the magnesium light. A number of very clear and beautiful "flash photographs," as they are called, were taken recently in the Kohinoor collieries, near Shenandoah, by E. B. Harden, general assistant of the Survey.

**Recent Changes of Tariff in Ecuador.**—Revision of the tariff laws of Ecuador affects the following articles which especially concern manufacturers and mining companies. Duty per kilo (= 2·2 lbs.) gross weight, Ecuadorian currency. The dollar Ecuadorian currency is equal to about 75 cents American gold: Furniture of all kinds, of no matter what material or what kind of coverings, 10 cents; hand-pumps for water, 2 cents; iron pipes of 12 in. diam., that do not form part of any complete machinery imported, although they may be applicable to such, and to steam or water-pumps, 10 cents; lumber, dressed and undressed, 5 mills; rails for tramways and railroads, 10 cents; salts of soda, 2 cents; sandpaper, 10 cents; steel or iron cross-ties for rails or tramways, 2 cents.

**Mineralizing Action of Alkaline Sulphides.**—Alkaline sulphides, as stated by Hautefeuille and Perry, in the *Journal of the Chemical Society*, when fused in a carbon crucible dissolve alumina at a dull red heat, and at higher temperatures crystals of corundum are obtained. The presence of an alkaline carbonate retards the mineralizing action, and an excessive proportion of alumina forms soluble compounds. Beryllia, likewise, dissolves in fused alkaline sulphides, and is converted into crystals, the proportion converted into soluble compounds being less than in the case of alumina, and independent of the presence or absence of alkaline carbonates. The crystals of beryl thus obtained are colorless, transparent and uniaxial. The common form is a hexagonal pyramid modified by faces on the edges of one of the bases.

**The New Industrial Era in India** —A recent editorial in the Indian *Engineer* calls attention to the rapid growth of India as a food exporting and manufacturing country. The time was when Europe turned to India for precious stones and handmade fabrics, giving in return her manufactures; now she is a competitor in European markets with her vast exports of fibers and grain. Indian exports have increased from 9½ millions sterling in 1834 to 88 millions in 1884, a large part of this growth occurring since the opening of the Suez Canal, which materially reduced freights to European ports: but the rapid development of the railway system has probably been the most important factor in this growth by opening up sections of country previously beyond reach, and permitting their products to be cheaply brought to the seaports. The use of local petroleum instead of wood or coal imported from England has reduced the cost of operating the railroads over 33½ per cent, an important item when taken in connection with the fact that it is the high freight rates which alone prevent India being a dangerous competitor with the United States for the grain trade of Europe, for as the *Engineer* observes, "the cost of production is so low that the ultimate dimensions of the Indian wheat trade are chiefly a question of possible reduction of the cost of carriage."

**Iron in Porcelain.**—In a paper on coloring porcelain in a high temperature furnace, Herr H. Seger (*Chem. Zeit.* 12), states that the best porcelain hardly ever contains less than 0·5 per cent of ferrous oxide, mostly 1·0 per cent and more, and that the more highly colored Chinese and Japanese porcelains contain as much as 2·5 per cent. The yellow color of porcelain is due to the presence of this iron in the state of ferric oxide, the green color to its presence as ferrous oxide, the color actually produced depending on the nature of the burning. The gray color due to a mixture of the two oxides seldom occurs, and then only in fusible porcelains. The yellow coloration is far more intense than the green; the latter results when a reducing flame is employed, and porcelain colored pale green thereby becomes yellow by repeated heating in an oxidizing flame, the ferrous iron being converted into ferric. The green color of Indian and Chinese Celadon porcelain is due to its containing 1·5 to 2·0 per cent of ferrous oxide. Normal white porcelain, when slowly cooled, assumes a yellow tinge, also due to oxidation, and for this reason it is customary to cool the mass rapidly. The author has never observed any yellow coloration produced by sulphates: in fact, sulphates only occur in very basic and not in the very acid silicates such as porcelain. Also the magnetic oxide of iron is reduced either to ferrous or ferric oxide in presence of silica, and in its absence the metal would result, so that the idea that the whole of the iron is converted at the high temperature employed in the burning into $Fe_3O_4$, is out of the question. These remarks regarding the coloring of porcelain also hold good in the case of glass.

**Engineering Education in Japan.**—A report on the Imperial University of Japan refers in considerable detail to the College of Engineering attached to that University. So extended has become the demand for the education of Japanese youth in the profession of engineering that the existing accommodation provided within the walls of the University is now quite inadequate, and the erection of a distinct building for a school affiliated to the University has been determined upon to meet the pressing necessities of the case. The graduates of the school as they leave the institution are said to be in "urgent demand," and the progress making with public works of all kinds in the several islands which constitute the Japanese Empire doubtless absorbs all the trained supervision the school can supply. But the unpractical nature of the education afforded is strongly commented upon in the report under reference. It alludes to the practice in Europe of young men training for the profession serving an apprenticeship on railways to gain experience, and when recommending such a course to the graduates of the school, points out that "this hard, practical training is worth any amount of theory to the definition and formula-crammed youths of the Empire." There is now to be observed a considerable falling off in the number of Japanese youths who have for some years past visited Europe to undergo a practical training in engineering, and the Government local school doubtless accounts for this falling off. But it is evidently now perceived by the acute Japanese authorities that no amount of local scholastic training, however high, can compensate for the loss of experience hitherto gained on the large works of Europe and America. The extension of their own system of railways under native direction, to which we recently alluded, will, however, in course of time afford full opportunity for adding practical to the present theoretical training of the school.—*The Engineer.*

**The Great Log-Raft.**—The work of launching the big timber-raft at Joggins, N. S., on the 25th inst., was superintended by an expert sent from New York by the owner. A few pieces of timber were cut away, and then the fate of the raft depended upon a few strokes of the ram about midships, where the shores were so arranged that it was only necessary to knock out one of them. After the first two strokes the raft started. The descent was gradual, but not rapid. When it struck the water the raft kept head up, and skimmed along gracefully. The speed decreased perceptibly as the last 200 feet left the launchways. Clouds of smoke caused by friction almost obscured the last half of the raft from view, but it soon cleared off. The impetus given it sent the monster about an eighth of a mile out to sea. It was a grand sight. The people cheered themselves hoarse as the raft glided so beautifully off the launchways. Two of the employees, Harding Parsons and Jack Carter, stood on top of the raft as it was launched. The raft was taken in tow by a tug-boat to a safe anchorage. Tug-boats have been ordered from Boston to take the raft in tow. These boats are of 750 and 400 horse-power respectively. Mr. Whidder, of the Boston office of the Boston Marine Insurance Company, states that the raft will be insured for $30,000. He is confident that it will reach New York safely. The owner of the raft, J. D. Leary, of Brooklyn, was also present. He says he will put this raft in the Erie Basin. Two more are to be constructed at once for launching next spring. The raft as it now floats is about two-thirds submerged. Two tow-chains are securely fastened through the timbers of the raft. The ends are planted and an anchor is attached forward. The timber-ship story turns out to be a myth. There are no masts and there is no deck-house, and the raft is similar in construction to that launched last autumn.

## PERSONAL.

The death of Professor Hermann Bonitz, the German philologist, is announced by cable.

Lieut.-Col. Walter McFarland, Corps of Engineers, U. S. A., died this week in New London, Conn.

Mr. E. M. Leuffer, civil engineer, who was well known in railroad circles, died at Hoosick Falls, N. Y., on the 23d inst.

Mr. Robins Fleming, C.E., has resigned the position of Instructor of Civil Engineering in Lafayette College, Easton, Pa.

Mr. Charles Sutherland, the well-known mining operator, has returned from London, England, and is now at his mines in Sierra County, Cal.

Dr. Ernest Mellis, M.E., is in San Francisco engaged in collecting the necessary plant for extensive water-works at Mazatlan, of which he is now the engineer.

Prof. Albert H. Tuttle recently of the Ohio State University, at Columbus, has been appointed Professor of Biology and Agriculture at the University of Virginia.

Gen. Wm. S. C. Wickham, Second Vice-President and Receiver of the Chesapeake & Ohio Railway Company, died very suddenly at his office in Richmond, on the 23d inst., aged sixty-seven years.

It is reported that the vacancy in the presidency of the Columbia College, School of Mines, New York City, caused by the resignation of President Barnard may be filled by Prof. Wm. B. Potter, of St. Louis.

Mr. Edgar P. Rathbone, of the firm of Messrs. Bainbridge, Seymour & Rathbone, mining engineers, of London, will shortly leave England to make his annual inspection of mines in the United States and Mexico.

Col. Garrick Mallary, U. S. A., connected with the Bureau of Ethnology of the Smithsonian Institute, Washington, is about to visit various historic places of interest in Eastern Maine, including the Indian hieroglyphic rocks in the Machias Bay.

Mr. William Cunningham, who has served as Secretary of the Eureka Consolidated Mining Company for the past six weeks, has resigned, to resume his old position as cashier of the money order department of Wells, Fargo & Co., at San Francisco. His successor has not yet been appointed.

Prof. H. S. Munroe, with ten students of the Columbia College School of Mines, has visited the copper and other mines of Lake Superior, Mich., and is now about to return east. It is said that the students were fully prepared for underground work, having clothes, lamps, oils, etc., and were no bother to the mine captains.

Mr. Arthur Thacher, mining engineer and metallurgist, representing the St. Louis Sampling & Testing Works, St. Louis, Mo., has gone to the San Juan region of Colorado on professional business. Mr. Thacher will be in Colorado for about a month, and will be prepared to make examinations and reports upon any property in that region.

Mr. William Church, President Detroit Copper Mining Company, Morenci, Arizona, retires from the management of the company's affairs September 1st. Mr. Church, although personally not very popular (largely through his unswerving course with regard to the company's relations), has been a wonderfully successful manager, tiding the company through the depression in copper, and having a profit on the ledger even when copper was at its lowest.

Colonel James Stevenson, the ethnologist, connected with the United States Geological Survey for many years, died in this city on the 20th inst., aged forty-eight years. At an early age he showed a strong taste for ethnology, and before his fifteenth year went beyond the frontier and studied the characteristics of several Indian tribes. In his sixteenth year he became engaged with the Government geological work, then being carried on under Professor Hayden, the head of the Geological Survey His researches were interrupted by the war of the rebellion. Immediately thereafter he began a series of explorations. When Major J. W. Powell was placed at the head of the Geological Survey, he appointed Colonel Stevenson as his executive officer. During recent years, however, Colonel Stevenson, at his own request, has been detailed on special ethnological research in in connection with the Smithsonian Institution.

A cablegram received in Philadelphia, Pa., announces the death of Henry Carvill Lewis, geologist, at Manchester, England, on Saturday, July 21st. Professor Lewis was born in Philadelphia on November 16th, 1853. He was graduated at the University of Pennsylvania in 1873, and in 1879 joined the State Geological Survey as a volunteer, and first investigated the surface geology of southern Pennsylvania, after which he studied the glacial phenomena of the northern part of the State, and traced the great terminal moraine from New Jersey to the Ohio frontier. He furnished numerous papers on the geology and mineralogy of Pennsylvania to the Proceedings of the Philadelphia Academy of Natural Sciences. He was elected Professor of Mineralogy in the Academy of Natural Sciences in 1880, and to the chair of geology in Harvard College in 1883. These positions he held at the time of his death. Since 1885 he had been engaged in geological studies in Europe, working at microscopic petrology in the University of Heidelberg, and had completed a map of the separate ancient glaciers and ice-sheets of England, Wales, and Ireland. Professor Lewis was a member of a number of scientific societies in the United States and Europe, and contributed to their Proceedings and to other scientific periodicals, including the *American Naturalist*, of the mineralogical department, of which he was for some time editor. It was at the British Association meeting, held at Birmingham in September, 1886, that he read his first paper on "The Genesis of the Diamond," and in describing the peridotite of the De Beers mine, and that from Kentucky, he suggested interesting possibilities in regard to the latter locality. Since then he was actively engaged in the fuller preparation of his paper on "The Genesis of the Diamond," visiting all the localities in the Southern States where diamonds have been found, and it was undoubtedly his intention to read this paper at the coming meeting of the British Association in September, and then to continue his geological studies in Norway, remaining in Europe for three or four years. Professor Lewis was an indefatigable worker, of keen perception. Genial in his manner, he made many friends; and although he had not reached the prime of life, yet his work is known to the entire scientific world, and gave promise of bringing him great distinction. In him science has lost a valuable worker and society a useful member, and he leaves a blank which will not be readily filled. Mrs. Lewis, who was a daugher of Professor Foulke, of New Jersey, is herself an able mineralogist and geologist, and will, it is to be hoped, be able to give to the public the results of her husband's work, so suddenly and sadly interrupted.

## INDUSTRIAL NOTES.

The Pottstown Iron Company's steel mill, at Pottstown, Pa., has suspended operations for an indefinite period, owing, it is said, to the depression of trade.

The plant of the Warren Tube Company, at Warren, Ohio, is to be sold by the Sheriff on the 14th of August next. The appraised value of the plant is $115,000.

The Chester Rolling Mill Company has contracted for the construction of a new Bessemer steel plant and blooming mill, with a weekly capacity of from 2000 to 2500 tons.

Negotiations are now pending looking toward the erection of steel works at Fall River, Mass. The syndicate purpose to invest one million dollars in the purchase of a site and the erection of a plant.

The two Cedar Point furnaces of the Baltimore Iron Company, at Baltimore, Md., have been dismantled. The wharf property has been sold to the Philadelphia, Wilmington & Baltimore Railroad Company.

The Sharon furnace, owned by Boyce, Rawle & Co., at Sharon, Pa., has been leased to J. J. Sparman, of Sharon, and Col. J. Collard, of Pittsburg. It has been standing idle a year, but will be started at once.

The Warren (Ohio) Iron and Steel Company will sign the scale and start up its refitted rolling mill on the 30th inst. The company will use coal powdered and fed with a blast for fuel and will make specialties.

The Benwood blast furnace, at Martin's Ferry, Ohio, which has been closed during the past three months for repairs was to be blown in this week. The furnace has been changed from a 50-ton furnace to a 100-ton furnace.

The San Diego Iron and Nail Manufactory, located at Roseville, Cal., and the immense buildings to be occupied, are nearly completed. When in working order the factory will use 25 tons of iron, and turn out 500 kegs of nails daily.

The Aluminium Brass and Bronze Company, of Waterbury, to the incorporation of which we referred in our issue of July 7th, has decided to locate its works in Bridgeport, Conn. At present the company is receiving bids and estimates on buildings, machinery, etc.

At the recent annual meeting of the Strong Locomotive Company, held at New Jersey, a contract was signed for the erection of extensive works with special machinery for turning out one of the company's improved boilers per day. The works are to be completed within six months from the date of the contract.

The Iron Moulders' Union of North America closed its sessions at St. Louis, Mo., on the 23d inst., after adopting a resolution that on and after April 1st, 1889, nine hours shall constitute a day's work for members of the union. If employers resist, strikes will be ordered in such districts, support being called for from the remainder of the country. The resolution was adopted by a close vote, meeting bitter opposition.

The Norway Furnace, at Bechtelsville, Pa., which was to be blown out this fall, owing to an accident which occurred this week, caused by the tunnel head falling in, has been blown out now. The necessary repairs can be completed in about six weeks, ready for resuming operations. The Philadelphia & Reading Coal and Iron Company, owners of the furnace, had commenced repairing the hot-blast, but now propose to put in at once a new or second hot-blast.

The Calumet Furnace, operated by the Chicago Furnace Company, and situated at Cummings, near Chicago, was blown out last week for repairs. The Minerva Furnace, at Wilwaukee, Wis., operated by the Milwaukee Furnace Company, consisting of substantially the same stockholders, has been blown in after thorough repairs. The Minerva Furnace will run on a Bessemer contract for the remainder of the year, to supply a local steel company.

The North Chicago Rolling Mill Company started up part of its works at Milwaukee, Wis., last week, having signed the scale. For some time they will not run the puddling furnaces on metal direct from the blast-furnace, as they have an accumulation of pig-iron on hand which will first be disposed of. The resumption of direct puddling will depend upon the condition of trade, as the pig-iron in stock may last for several months if the demand for finished iron is not more active. When it is cleaned up direct metal will again be used, as the results obtained with it in the first half of the year were very satisfactory.

The new gas plant of Henry Disston & Sons, at Tacony, Pa., was started on the 21st inst. and in two weeks it is expected that the entire works will be in perfect running order. The plant, which is the outcome of over a year's experiments by the firm in the use of gas as fuel, it is said, has cost over $40,000, including holders and pipes and is intended to supply with fuel, not only the establishments of the Disstons, but any other of the manufacturing concerns in the neighborhood which may wish to use it. The gas costs only 5 or 6 cents per 1,000 feet. It is cheaper than either anthracite or bituminous coal, and, in addition to its value as a fuel, can be made an illuminant by being carburetted.

In accordance with the decision of the Inter-state Commerce Commission, Holdship & Irwin on the 26th inst. entered suit at Pittsburg, Pa., against the Pennsylvania Railroad Company for damages for alleged discrimination in rates and facilities. The firm assert that they shipped from Pittsburg to Philadelphia 90,044 barrels of refined oil in 1884, 100,353 barrels in 1885, and 71,174 barrel in 1886, a total of 261,571 barrels. They allege that a rebate of thirteen cents a barrel was allowed a competitor, and claim triple damages as allowed by the statute, which would amount to $102,012.69. They allege further damage in the discrimination in the matter of cars, and sue for $150,000 to cover all damages.

Mr. E. A. C. Du Plaine, the proprietor of the Chicago Smelting and Refining Works, has erected new works at Chicago. The works occupy a lot 30 feet in width. The foundry department has a capacity of two No. 150 crucibles, two No. 80 crucibles, and two No. 50 crucibles, equal to 4000 pounds of brass or bronze daily. The necessary core ovens and molding tubs are provided. The list of products made is quite extensive, embracing bronze or brass castings, phosphor-bronze, nickel-bronze, architectural or ornamental work, and United States standard gun metal work of any required weight for machinery, engines, rolling mills, mining pumps and railroads. A special plant is employed for making anti-friction or Babbitt metals, tinsmiths' and plumbers' solder, plumbago and nickel Babbitt, stereotype and electrotype metal, coffin and fusible alloys, etc.

The Attalla Furnace Company, of Chattanooga, Tenn., is pushing on its furnace at Attalla, Ala. The stack is to be 55 feet high by 11 feet bosh, equipped with cast-iron stoves of special pattern, with 60 pipes, and two boilers, each 54 inches in diameter and 28 feet long, and two 18-inch flues. The Weimer engine has a 26-inch steam cylinder, and 60-inch blowing cylinder, with 4-foot stroke. The foundations are now complete, and all the ironwork is on the ground. All the machinery is contracted for, and will be on the ground by October 1st, and it is expected that at the latest the furnace will be in blast on January 1st, 1889. The furnace is to be run with charcoal, with a view of making high-grade carwheel iron. The ore to be used is what is known as the Dirt Seller vein, obtained near Round Mountain, 30 miles from Attalla, on the Rome & Decatur Railroad.

## CONTRACTING NOTES.

Machinery and supplies wanted. See page xiv.

Contracts open will be found on page xxi. New contracts this week: No. 975, System of Water-Works; No. 976, Construction of Sewers; No. 977, Lighting Apparatus; No. 978, Canal; No. 979, Iron Bridge; No. 980, Water-Works; No. 981, Metal Work for a Lighthouse Tower; No. 982, Copper and Iron Work, Stone, Brick, etc., and other Supplies; No. 983, Boiler for U. S. R. Steamer "Corwin;" No. 984, Building Gas-Works.

The expenditure of $1,200,000 for the Brooklyn, N. Y., water-works has been authorized, it will be divided as follows: For the enlargement of the Ridgewood reservoir, $550,000; for two additional pumping engines, engine house and main at the Woodhaven pumping station, $350,000; for driven wells and a pumping station at Baisley's Pond, $200,000; for repairs to the conduit near Baisley's Pond $100,000.

The Navy Department has awarded the following contracts for steel for use in the construction of the armored battle-ship "Texas," to be built at Norfolk: For 920 tons of steel plates, Park Brothers & Co., of Pittsburg, $66,770; for 503 tons steel shapes, Carnegie, Phipps & Co., of Pittsburg, $43,266; and 100 tons of steel rivets, $8601; the Standard Steel Casting Com-

pany, of Thurlow, Pa., 120 tons of steel castings, $41,664.

Bids for the construction of the St. Mary's Falls Water-Power Canal have been opened at Sault Ste. Marie, and McArthur Brothers, of Chicago, being the lowest bidders, were awarded the contract. The specifications call for a canal 100 feet wide, to carry 9½ feet of water. The contractors are given until August 1st, 1889, to complete the work. Its estimated cost is $2,000,000. There were 14 bidders from Sioux Falls, Dakota, to Louisville, and including Sooy Smith & Co. and Collins & Farwell, of New York.

## GENERAL MINING NEWS.

Shipments of iron ore from the mines of the districts mentioned below for the season up to and including July 18th, as reported by the Marquette *Mining Journal*, were as follows:

| | Tons. 1888. | Tons. 1887. |
|---|---|---|
| Marquette, Marquette District | 218,330 | 333,387 |
| St. Ignace, " " | 50,262 | 27,017 |
| Escanaba, " " | 322,635 | 362,923 |
| " Menominee District | 388,783 | 470,164 |
| " Gogebic District | 90,933 | ... .. |
| Ashland, " " | 330 645 | 397,298 |
| Two Harbors, Vermillion District | 106.877 | 129,774 |
| Total tons | 1,508,465 | 1,730,563 |

Buffalo has just begun to take prominence as an ore receiving and shipping port. A new ore dock, the Minnesota, has recently been opened, and the old docks are still undergoing improvements. The bringing to Buffalo of ore is practically a new business, and it promises to be extensive. Contracts have been closed for the construction and equipment of a large dock on the Blackwell Canal to be used for receiving iron ore from lake vessels. H. K. Wick, of Youngstown, Ohio, who has for some time been engaged in the soft coal trade at Buffalo, is at the head of the scheme. He is also largely interested in coal and iron ore at Ohio ports.

It has been found that ore can be furnished to Eastern foundries from this port to better advantage than from Ohio ports, and hence the need of more facilities for unloading and shipping it. Leases have been secured for a term of years of a strip having 1400 feet frontage on the canal and a depth of 200 feet. Room will be had for the storage of 100,000 tons of ore. The contracts call for the completion of 400 feet of dockage, with hoistin apparatus, railway track and switches by August 9th. Things would therefore be in shape to unload ore vessels at that date. The other 1000 feet of dock will be pushed right along. Four Brown hoists, which will have the capacity to take out 1000 tons of ore a day, will first be erected. Later two others will be added, giving the dock facilities for the unloading of 1500 tons daily. By means of the Buffalo Creek road connection may be made with all the railways running east. The new dock will thus have easy and convenient access to all ore consuming points.

### ALABAMA.

JACKSON COAL AND COKE COMPANY.—This company has completed the purchase of 30,000 acres of coal land near Chattanooga, lying chiefly in Jackson County. It intends to erect five hundred coke-ovens, and carry on extensive mining operations. The company is capitalized at one million dollars, and consists chiefly of New Orleans bankers.

### ARIZONA.

#### GRAHAM COUNTY.

WONDERFUL.—This claim, belonging to the Friend Brothers, has been bonded to Messrs. Calhoun and Montgomery, of Watrous, N. M. It is stated that it involves the erection of a Huntington mill and concentrator, which will be commenced within a very short time. The Wonderful claim is situated within a mile and a half of Clifton, and has produced some very fine shipping ore. The Clifton *Clarion* says that it is claimed now that there is on the dump and in sight of the mine fully 5000 tons of ore carrying a good percentage of gold, which will pay largely under the proposed method of working, which will be on the same plan as that now pursued by the Carlisle Company.

### ARKANSAS.

#### MILLER COUNTY.

In boring for coal at Bowie Mountain, 15 miles from Texarkana, according to press reports, a flow of petroleum was struck.

### CALIFORNIA.

#### BUTTE COUNTY.

CHEROKEE.—The Orville *Mercury* states things are at a standstill in the suit of Keppel against the mine. Judge Freer is in San Francisco and is unable to hear the argument. Since this trial commenced the foreclosure suit for $260,000 has been filed and other injunction suits are pending negotiations.

#### MONO COUNTY.

STANDARD CONSOLIDATED MINING COMPANY.—The company has sent us the following official report:

| | | |
|---|---|---|
| June 1—Balance on hand | | $49,012.15 |
| Bullion product | | 10,975.83 |
| Sundries | | 59.15 |
| | | $60,047.13 |
| Dividend No. 75 | $5,000. | |
| Expenses | 16,107.11 | 21,107.11 |
| July 1—Balance on hand | | $38,940.02 |

#### NEVADA COUNTY.

OMAHA CONSOLIDATED MINING COMPANY.—In addition to twenty tributers and contractors, forty miners are employed at this mine, which has been abandoned for years and only recently reopened. The ten-stamp mill is now running on company rock of fair grade, and it is believed the run will be continuous. This applies to the ore from the Omaha shaft. In the Lone Jack shaft the water is being steadily lowered, and, of course, more or less timbering being done. At a point 320 feet from surface two shafts were discovered, but these were found to consolidate at a depth of 420 feet. The water is at present just below this point and the shaft is in very good condition. A drift to connect the Omaha and Lone Jack shafts has been started from the Omaha. This will be 150 feet in length, and is calculated to penetrate the Lone Jack at a depth of 400 feet.

#### YUBA COUNTY.

NORTH BLOOMFIELD GRAVEL MINING COMPANY.—A suit has been begun against this company, asking that defendant be enjoined from dumping debris into the Yuba River, and also from selling water for mining purposes. The action was instituted by the United States, represented by Attorney-General Hart. This is the first time a suit has been brought in this way.

### COLORADO.

#### CHAFFEE COUNTY.

MARY MURPHY MINING COMPANY.—Mr. F. J. Weist, of Boulder, has patented a process of roasting ore in muffles, and experiments are claimed to have been successful with the refractory ore of the Mary Murphy mine. If the process can be cheaply worked on a large scale it will prove of inestimable benefit to this mine.

#### DOLORES COUNTY.

SANTA CLARA MILL.—This mill has been idle for some years, having been bought by a company represented by W. K. Patrick, preparations are being made to fit it up with concentrators for special treatment of the ores of Rico and vicinity.

#### GILPIN COUNTY.

GREGORY-BOBTAIL MINING COMPANY.—This company is contemplating putting in a pump capable of raising 1000 gallons per minute 1000 feet high.

#### GUNNISON COUNTY.

RUBY CHIEF MINING COMPANY.—In the trial of M. A. Hawkes against this company, in Denver, the jury gave judgment to Mr. Hawkes for over $4000, it is said, in direct violation of the instructions of the court to the jury, and the result is the verdict is set aside and a new trial ordered. Were it not for this suit pending against the company the property would be worked.

#### LAKE COUNTY.

DUNKIN MINING COMPANY.—The company has contracted to deliver during the months of August and September 2000 tons iron ore to the Durango Smelting Company.

SMALL HOPES CONSOLIDATED.—We have received the report of this company, dated at St. Louis, June 18th, 1888. There were mined during the year, 42,852·48 net tons of ore, containing 860,945 ounces of silver and 51,923 pounds of lead. The receipts from the sale of ore were $550,931.46; expenditures at the mine, $250,107.66; leaving a net profit of $300,823.80. Dividends, Nos. 54 to 60, inclusive, of $50,000 each were paid during the year. Since January 18th, 1880, the receipts from ore sales were $4,237,105.59; from all sources, $4,286,642.76; expenditures at mine, $1,050,676.85; of all sorts, $1,088,394.03. The net profit was $3,198,248.73, of which sum $3,112,500, or $12.45 per $20 share has been paid in dividends since February 14th, 1880.

TREASURER'S STATEMENT.

*Receipts.*

| | | |
|---|---|---|
| 1887. June 20, To balance on deposit with First National Bank, New York | | $37,737 62 |
| 1888. June 20, " Surplus fund on hand | | 75,468.75 |
| June 20, " Amount received from Leadville Office, from June 20th, 1887, to June 20th, 1888 | | 319,500.00 |
| 20, " Interest on dividend fund to June 1st, 1888 | | 980.61 |
| 20, " Interest on surplus fund to June 1st, 1888 | | 3,277.66 |
| Total receipts | | $436,964.64 |

*Expenditures.*

| | | |
|---|---|---|
| 1888. June 20, By dividends—Paid to stockholders, being Nos. 54 to 60, inclusive, from June 20th, 1887, to January 1st, 1888 | | $350,000.00 |
| 20, " Sundry expenditures, as per statement, being salaries, rent, taxes, etc., ordered paid by Board of Trustees, from June 1st, 1887, to date, June 20th, 1888 | | 7,320.46 |
| 20, " Expenditures in development from surplus fund | | 26,311.49 |
| Total expenditures | | $383,631.95 |
| June 20, By cash on deposit in Western National Bank, N. Y | | 897.77 |
| 20, " cash surplus fund for development | | 52,434.92 |
| | | $436,964.64 |

JAS. O. CHURCHILL, Treasurer.

ST. LOUIS, Mo., June 20, 1888.

Examined and found correct: John L. Lawrence, Eugene A. Furber, Stockholders' Auditing Committee.

ASSETS AND LIABILITIES JUNE 1ST-20TH, 1888.

*Assets.*

| | |
|---|---|
| Mining property at Leadville, Col., consisting of about 30 acres of surface area, being the Forest City, Result, Robert Emmet, and part of Ranchero Claims, costing | $5,000,000.00 |
| Boreel Mining Co., balance due from | 2,063.55 |
| Engines and hoisting machinery on hand, estimated by Superintendent to be worth | 10,106.52 |
| Pumping plant, pumps, &c., bought in 1886, costing | 9,893.48 |
| Due from Donnell, Lawson & Simpson | 11,300.00 |
| 1st Nat. Bank of Leadville, due from | 12.44 |
| Cash on deposit and on hand | 62,479.26 |
| Total | $5,095,855.25 |

*Liabilities.*

| | |
|---|---|
| Capital stock of co. at par, 250,000 shares, at $20 each | $5,000,000.00 |
| Balance in company's favor, being amount of assets over liabilities | 95,855.25 |
| Total | $5,095,855.25 |

The manager's statement shows a falling off in the grade of ore to 44.4 ounces per ton, and also that there is comparatively little ore in sight. The Blaine shaft, quite profitable for some months past, is about exhausted, but the undeveloped ground in the vicinity is expected to yield some ore. Work at the Hood shaft was stopped March 3d last, and every thing taken out. Sinking in the Emmet was stopped September 26th, at a depth of 821 feet, and a bore hole sunk 180 feet deeper into the quartzite, but nothing found, and drifts driven to the contact between the gray porphyry and parting quartzite were abandoned March 11th, as hopeless. The Kerens, Corry and Elkins produced the majority of the ore mined, but for the past few months nothing but prospecting has been done, and some ore found. The manager's report concludes by recommending a continuance of the policy of making exploration the prime object until more ore is found. On the whole report is far from favorable, and shows a great decline in the value of the property from the report of years past.

#### OURAY COUNTY.

RUBY TRUST.—Reports from this mine state that the mill has started up running 24 hours a day instead of 12, as was the case previously. The results of the run showed that the concentrates averaged 150 ounces silver, $\frac{1}{100}$ ounce gold, a decidedly good showing. There has been no clean-up of the plates yet, but these are expected to save the same amount. About 60 to 75 sacks of ore are ready for shipment to Denver, and these are expected to run from $500 to $1000. The company is now getting ready to incorporate, and H. A. Dieckman, C. J. Hannebrink, and Fred Hattersley are the commissioners. The capital stock will consist of 800,000 shares of $10, or $8,000,000 all told. The company expect to put up 40 more stamps shortly.

#### PARK COUNTY.

The ore shipments from Fairplay continue large and will reach one hundred tons per day. The Peerless, a new producer in Horseshoe Gulch, is helping the shipments considerably. The mining excitement in Horseshoe is growing, and prospectors from Leadville are flocking in at from fifty to sixty a day. Four-horse teams are employed in the transportation of ore at present.

BROWNLOW MINING COMPANY.—A strike has been made in one of the mines of this company, which owns considerable property in Mosquito Gulch, near London Junction. The property was formerly known as the Neston, but was purchased a few months ago by the Brownlow Mining Company, which is composed of St. Louis people. A body of free milling gold ore 13 feet thick has been struck in the vein, and the whole will assay from $8 to $10 per ton on the plates. The company has a 10-stamp mill and 20 more stamps are soon to be added. Colonel Kyle, who was formerly in charge of the White Cap mine on Iron Hill, is the superintendent of the Brownlow.

MUDSILL MINING COMPANY.—Mr. T. H. Legget has been appointed manager of this property. He will have charge of the company group at Horseshoe. The ore chute that carries the ore from the mine to the mill will be finished so as to enable the mill to start up shortly. A large amount of ore is broken in the mine ready for treatment.

#### PITKIN COUNTY.

ASPEN MAMMOTH.—In the United States Circuit Court at Denver on the 17th inst., the suit of Tobey *vs.*, Wheeler *et al.*, was dismissed as per stipulation. The suit was for a three fourths interest in the Aspen Mammoth mine at Aspen. It is one of the group of mines owned and operated by Jerome B. Wheeler and the Aspen Mining and Smelting Company. Tobey claims the interest on the ground of having grubstaked one or more of the locators. The property is considered by persons somewhat familiar with the camp to be worth a large sum of money. The Denver *Republican* says that the company were apparently desirous of getting rid of Tobey, as an ownership by him would be of disadvantage to the company. The plaintiff obtained a verdict in the first trial of the case and the defendants were about to take a new trial, but considered that a compromise would be the better thing. As near as could be ascertained, the amount paid Tobey to withdraw the suit and all claim to an interest in the property is probably between $25,000 and $30,000.

DURANT.—The great tunnel proposed by the owners of this mine will soon be started. It will start at the base of the mountain on the 1001 ground, and run under the Durant claim. It will be wide enough for a double track.

#### SAN MIGUEL COUNTY.

SHERIDAN MINING COMPANY.—The tunnel begun by this company last fall will connect the Sheridan and Merudota mines with the town of Telluride. This tunnel will accomplish a double purpose. Besides making a means of transporting ores, it will tap the Sheridan vein several hundred feet below the present workings. The vein runs northwest and southeast, and this tunnel will run in a southwesterly course from the mines. It is now in from Cornet Creek towards the vein a distance of 900 feet. The total length of the tunnel from the mine workings to the nearest point to Telluride, at the base of the range, will be 3500 feet. At a distance of 2700 feet from the mine workings a drop will be made of 1000 feet

for the purpose of tapping the vein at that point. The size of the tunnel is seven feet in height by six and a half feet wide, large enough to accommodate ore cars. This will be an advantage not only for the Sheridan company but for other mines on this vein as a passage-way for ore. The present method of transporting ore is by jack trains, a distance of nearly five miles, and is necessarily slow.

SUMMIT COUNTY.

JUMBO MINING AND MILLING COMPANY.—Work has stopped at this mine, and the Eureka Mill at Breckenridge has closed down. The tunnel which has been driven since last fall has reached the vein supposed to be the Jumbo, and now instead of being as heretofore a drain on the resources of the company ought to furnish facilities for getting ore cheaper than formerly, also decrease the expense of keeping the mine free from water. The tunnel will afford a vast extent or stoping ground from which ore ought to be extracted at much less cost than formerly.

## DAKOTA.

HARNEY PEAK TIN MINING COMPANY.—The Rapid City *Republican* announces the closing of the Harney Peak tin deal. The deal, it is stated, was closed shortly after the 1st of June. For some reason the resident agents of the company were unwilling to make the fact of the closing of the deal known, and it was through a reliable English source that the information came to the *Republican*. The closing of the deal means nothing but the fulfillment of a condition precedent embodied in the original contract entered into by the Harney Peak people prior to Prof. Vincent's visit to the Hills. That condition was, that the report of the professor should prove satisfactory and as such a result was reached May 25th last, the London people have wasted no time in putting up money for certain work. Mr. Willsie, agent of the company, has received orders to complete the surveys of the narrow gauge roads. The reorganization of the tin company has been effected, and the name of the Rapid City & Southwestern, which was fixed to the narrow gauge system, has been changed to the "Rapid City, Harney Peak & Southwestern." It is understood that parties are expected to arrive from London, very soon, and that important movements will occur when they arrive. The company has purchased a number of tin properties held under bond in Custer and Pennington counties. Among the properties transferred are the following: The Darwin lode in the Tenderfoot District, five miles northwest of Custer, sold for $10,000; the Tin King lode, near Spring Creek, seven miles north of Custer, sold for $10,000; Grizzly Bear group, sold for $6,000; the Campaign group, near Hill City, sold for $14,000; and the Cook and Rogers group of mines, $7,000. The money due on the bond on the February group of tin locations has been paid. The deeds to the White Whale group of tin mines near Hill City have been taken out of escrow at the First National bank, and delivered to the company in consideration of payment of the purchase price agreed upon. The group sold comprises five claims, lying contiguous to the Mewonotoc, owned by the company.

We are not acquainted with the details of the terms on which the Harney Peak deal has been made, but if as originally proposed, the English investors will doubtless have cause to regret it. If, on the other hand, the money invested is to go into legitimate development of the property, and not merely to enrich a few speculators, then the prospects are excellent for a good return, for, as we have frequently stated, Dakota possesses so many fine tin "prospects," it is reasonable to expect that some of them will develop into "mines." And we have nothing but good wishes and words of encouragement for every honest and intelligent effort to develop the mineral resources of the country. With equal sincerity we shall continue to denounce the dishonest schemers who endeavor to sell worthless property or even fair "prospects" at the prices of great bonanza mines, and to divide the "boodle" among the unscrupulous promoters. Such was the original Hearney Peak scheme. We trust this final "deal" has a more honest foundation, and that it contains some of the elements of a fair and successful mining enterprise.—ED. E. & M. J.

LAWRENCE COUNTY.

UNCLE SAM MINING COMPANY.—A special meeting of the company was held at Deadwood on the 19th inst. The principal subject discussed was as to resuming operations at the mine. The sense of those present was strongly in favor of doing so; and a resolution was accordingly adopted, authorizing Secretary Jos. Swift to proceed to St. Louis and purchase a Cornish pump large enough to handle the water in the mine, by which operations have been prevented in the last year.

## IDAHO.

ALTURAS COUNTY.

The mine owners of Wood River met in Hailey last week to take measures to secure a reduction of ore freights, and have asked the Union Pacific Railroad for a uniform rate of $10 per ton on all ores from Wood River points to the Missouri River.

CHAMPION MILL AND MINING COMPANY.—The mill will commence crushing between August 1st and 10th.

KOOTENAI COUNTY.

A correspondent sends us the following from Cœur d'Alene City:

The production of this section will undoubtedly be very large, although at present, owing to the low price of lead and high freight rates, there is nothing shipped. A considerable reduction of the latter is looked for soon, however, and shipments will then begin again. With favorable conditions, and the whole of the mines in *full operation* the product will be about as follows:

| | Concts. Tons. | Lead. Per cent. | Lead. Tons |
|---|---|---|---|
| Bunker Hill—Sullivan | 1100 | 65 | 715 |
| Sierra Nevada | 600 | 45 | 270 |
| Stemwinder | 400 | 60 | 240 |
| Tyler | 400 | 60 | 240 |
| Poorman | 1000 | 60 | 600 |
| Tiger | 1000 | 52 | 520 |
| Granite | 600 | 60 | 360 |
| Gem and smaller mines | 300 | 60 | 180 |
| Per month | 5490 | | 3125 |

At present the Stemwinder, Sierra Nevada, and Tyler mines are closed down, the Granite and Poorman are building their concentrators, to be ready in about a month or six weeks, and the Bunker Hill and Tiger are holding their concentrates for better prices. With lead at 3·75 scarcely any of the mines can make a profit, but the freight reduction expected will be equivalent to about ¾c. per pound rise in price of lead.

## ILLINOIS.

CHICAGO, WILMINGTON & VERMILLION COAL COMPANY.—This company has added to its already extensive coal property at Braidwood and Streator by the purchase of 3000 acres of coal lands at and around Seatonville, underlying which is the well-known Illinois Third Vein coal, averaging from 3½ to 4 feet in thickness. One shaft is already in operation on this newly acquired property, which the company will at once supplement, however, by sinking additional shafts, preparing to meet the demand that will very naturally turn to this new field. The company will use the Harrison mining machines in this new field. The mine already in operation conclusively establishes the fact that no water will be encountered in the workings. The most brilliant move, however, in connection with the acquisition of this valuable property is the construction of a railroad by the company, being somewhat in the shape of a belt line. This new road has been incorporated under the name of the "De Pue, Ladd & Eastern Railroad," with A. L. Sweet President. The road will extend from a station on the C., B. & Q. R.R. to De Pue, on the C., R. I. & P. R.R., running directly across the company's property. From the main line connections will be made with the C. & N. W. R.R. at a point about five miles from Spring Valley and also with the Illinois Central R.R. at Dimnick, Ill., thus giving the company a direct outlet for its coal over these four large railways, and through them, of course, connection with every road leading north and northwest.

## INDIANA.

GRANT COUNTY.

CITIZEN GAS COMPANY.—Gas well No. 14 being drilled by this company at Marion has touched Trenton rock at a depth of 844 feet. At fifteen feet in the Trenton there was a rush of gas which promises to develop a gusher in the next twenty or thirty feet. The well is the first one drilled by this company, organized in opposition to the Mississihewa Gas Company.

## IOWA.

HAMILTON COUNTY.

The gas well at Webster City has been abandoned after a depth of 1254 feet had been reached.

JASPER COUNTY.

A large deposit of red hematite ore suitable for the manufacture of paint has been found near Monroe, and a company is being formed to mine it for that purpose.

## KANSAS.

SEDGWICK COUNTY.

WICHITA KANSAS MINING COMPANY.—This company held a meeting recently in Wichita for the purpose of amending its charter, and to increase the capital stock from $500,000 to $1,000,000. The officers of the company at present are as follows: President, W. S. Reece, of Reece; Vice-President, N. V. Harkness, of Kansas City; Treasurer, Wm. Mathewson, of Wichita; Secretary, Geo. E. Morris, of Wichita; Geologist and General Manager, J. P. Woodbave. The company own and control upward of 36,000 acres of the richest coal bearing land in the State, all within a radius of 100 miles from Wichita. The first drill has been started at Peabody; other drills will be started at once.

## MICHIGAN.

Extensive litigation has begun over the title to the Gingrass-Forty property. Three parties claim title to this forty under options from Gingrass. One of these, the Michigan Gold Company, composed of Cleveland and Chicago capitalists, has explored there since last summer until recently, when operations were abandoned ostensibly on account of severe cold and deep snow. A suit for possession has been begun by a syndicate of Pittsburgh and Marquette men, who claim title under what is known as the Grumett Option. This is now pending. After the Michigan Company suspended work the latter parties took measures to ascertain the richness of the rock, believing the stop to be a blind. It is stated that trusty men examined the main shaft and secured samples of the vein matter from the bottom. Assays of these are said to have yielded to the ton: gold $363.80, and silver $148. This is the first definite information obtained as to the richness of the vein, which has been stripped 600 feet. A big suit over the property is now certain, as all the claimants possess ample means and have employed the best lawyers in Michigan.

LAKE SUPERIOR IRON COMPANY.—At the company's shaft, seven miles from Ishpeming, 3000 pounds of quartz carrying free gold at the rate of over $60,000 a ton was uncovered by one blast on the 20th inst. Some very rich discoveries, to which we referred in the ENGINEERING AND MINING JOURNAL at the time, have been made before at this shaft, but nothing like this. The quartz brought out by one blast is said to be worth fully $10,000. The shaft will be sunk as rapidly as possible. It has now a depth of 22 feet. Arrangements are to be made for milling the quartz to be mined.

ROPES GOLD AND SILVER MINING COMPANY.—A syndicate of Detroit capitalists, at the head of whom is Gen. Russell A. Alger, recently had this company's property examined by an expert. The report was favorable, and the syndicate will buy a controlling interest out of 80,000 shares, paying $3 per share. We referred to the proposed sale of a block of this company's stock in our issue of June 23d.

COPPER MINES.

A private letter tells us that a very promising discovery of copper has been made on the W½ of SE¼ of Sec., 2 Tp. 47 N., R. 25 W., Michigan. The vein is said to be 20 to 25 feet wide, with well defined hanging-wall of quartzite and foot-wall of blue slate.

The old Peninsula mine is being unwatered; is now to the 4th level. Mr. North's large interest has passed into other hands.

ALLOUEZ MINING COMPANY.—Advices from this mine state that work is going along as rapidly as is consistent with a due regard to economy, says the Boston *Transcript*. A thorough renovation of the surface plant and stamp mill is in progress, and a new hoist for No. 1 shaft has been contracted for. It is the intention of the directors to put all of the machinery and working appliances in the best working condition before starting the mill, in order that the rock may be handled at the least possible cost. Meanwhile, the underground workings are putting in thorough working order, and extensive openings are making. It is expected that the stamp mill will be started, and active production of copper begin about the first of October. It had been hoped to start earlier, but it was deemed better to wait until all of the contemplated repairs, alterations and improvements are completed.

CALUMET & HECLA MINING COMPANY.—Seven drilling machines were set at work in the twenty-fifth level of the Hecla No. 3 shaft last week. This is the first work done under ground in the old mine since since October, 1887.

The report of the treasurer of the Calumet & Hecla Employés' Aid Fund for the year ending May 1st, 1888, shows that the employés have paid into the fund $15,443, and that (as usual) the C.& H. Company have donated a like amount, making a total of $30,886. Received from the dividends on 266 shares of Calumet & Hecla stock held by the fund, $2660, which, with the balance on hand May 1st, 1887, made the total cash $40,203.38. The disbursements have been: For deaths by accident, $6500; for other accidents, $9,914.90; sick pay, $18,424.29; total amount of disbursements, $34,839.19. The amount of funds on hand May 1st, 1888, was: Cash in bank, $5,267.44; 266 shares of Calumet & Hecla stock (cost), $56,806.32; being a total of $62,073.76. Thirteen persons lost their lives by accident during the year, and their heirs received $500 in each case.

CENTRAL MINING COMPANY.—The mine of late has been cutting an unusually large quantity of mass copper, which is not yet ready to hoist, hence its monthly products of late have been small, comparatively, but the whole year's output undoubtedly will fully equal last year's product of 1220 tons, or nearly 2,000,000 pounds of fine copper.

FRANKLIN MINING COMPANY.—In the east lode of the 30th level about 2 feet of ore was cut. The breast of the cross-cut showed rock that will yield from 1½ to 3 per cent mineral.

TAMARACK MINING COMPANY.—The Boston *Transcript* publishes the following figures of the operations of this company for the fiscal year ending June 30th, 1888. The product of refined copper amounted to 10,389,867 pounds, for which an average price of 13·8 cents per pound was obtained, or $1,434,626. Total expenses, 5¾ cents per pound, $597,417; construction account, $155,000; dividend April 1st, $3 per share, $120,000; total, $275,000. Dividend paid July 1st, $3 per share, $120,000; add balance surplus July 1st, 1887, $25,445; total balance of assets, $467,654.

The progress of the Tamarack mine in the three years of its active operation has been as follows:

| | Year ended June 30, 1888. | June 30, 1887. | June 30, 1886. |
|---|---|---|---|
| Product mineral, pounds | 13,607,224 | 6,232,119 | 2,638,020 |
| Per cent mineral in rock | 4·74 | 3·44 | 3·65 |
| Per cent fine copper in mineral | 76·356 | 74·40 | 75·03 |
| Product fine copper, pounds | 10,389,867 | 4,636,521 | 1,979,400 |
| Average price received per pound | 13·8c. | 10¼c. | 10·05c. |
| Total gross receipts | $1,434,626 | $474,615 | $198,945 |
| Total expenses | 597,417 | 380,582 | 160,465 |
| " " per pound | 5¾c. | 8·21c. | 7½c. |
| Net profit | $837,209 | $94 032 | *$41,061 |
| " " per pound | 8·05c. | 2·04c. | 2·55c. |
| Construction | $155,000 | $194,187 | $95,873 |
| Dividends | 240,000 | ..... | ..... |
| Balance assets | 467,654 | 25,445 | 100,560 |

* Includes $2581 receipts from interest.

These figures show the increased richness of the mine as developments progress. The manner in which expenses of getting out a pound of copper and laying it down in New York have decreased also is striking, which, coming in connection with a material rise in the price obtained for the product, results in a very emphatic record of improvement. The latest report from the superintendent says that the ninth level (the bottom level) shows great improvement south, and the stopes are better than for some time past, while the

winze on the vein under the ninth level is looking well: in other words, the mine shows no diminution of richness as development progresses, but rather the reverse.

IRON MINES.

BRAASTAD.—The Mitchell and Winthrop mines, to the sale of which we referred in our issue of July 14th, will hereafter be known as the Braastad mines. The new pump has been ordered and the foundation for a new engine house has been laid. It will require several months to complete the improvements that have been commenced and which are contemplated.

CANADIAN IRON COMPANY.—This company has struck ore in the diamond drill hole being put in to the north. Considerable money has been expended in the search.

DEXTER.—The indebtedness of the company has been settled. There will be a pay-day every month. Capt. Thos. Walters, who has charge of operations, states that the mine is looking very encouraging, and he believes will pay its way in future. The ore is a Bessemer of good quality.

IRONTON (GOGEBIC) MINING COMPANY.—The officers of this company have issued a circular to stockholders, urging them to subscribe to the $40,000 bonds remaining at 60 cents on the dollar, as the proceeds of the sale of these bonds would put the company on its feet, with a mine developed, equipped and ready for a profitable business. The circular says that explorations with a diamond drill penetrated a quartzite capping 60 feet below the present shaft and then passed through 34 feet of pure, clean ore. This warrants the officers in asserting that there is a mine of Bessemer ore on the Ironton property, and it is only a question of time when a good standard of value will be given the securities of the company if the stockholders will stand behind their investment and furnish the means to open out and develop the mine. The shaft must be sunk at least 100 feet to reach a level for mining. The liabilities of the company have been paid down to $15,000. It may be remembered that Ironton was listed on the Boston Stock Exchange in March, 1887. The stock, of which there are 40,000 shares, par value $25, was "placed" in Boston. It sold as high as $12 per share when Gogebic mines were "booming." In the ENGINEERING AND MINING JOURNAL of February 11th we referred to the difficulties of this company.

YOUNGSTOWN MINING COMPANY.—This company, composed of iron manufacturers of Youngstown, has notified the owners of the land on which its mine is located that it will surrender its lease and abandon the mine, unless concessions in regard to royalty are granted. The mine is located at Crystal Falls. It is probable that there will be a general movement looking toward a reduction in royalties before long.

## MINNESOTA.

ST. LOUIS COUNTY.

CHANDLER.—This mine, 25 miles east of Tower, on the main range of the Vermillion District, will commence shipping iron ore on August 1st, and will forward 600 tons a day of high grade Bessemer. This mine is expected to be a heavy producer. Mr. Joseph Sellwood is superintendent of mining operations.

## MISSOURI.

ST. FRANÇOIS COUNTY.

IRON MOUNTAIN COMPANY.—This company is rapidly opening up the "new find" of iron ore at its Iron Mountain mines. Prof. W. B. Potter, who has charge of the operations as consulting engineer, is entitled to the credit of this discovery, which resulted from explorations made on his advice and in a direction indicated to him by a thorough study of the geological formation. A very large deposit of a most excellent quality of high grade Bessemer ore has been opened up, which will again bring this company to the front as heavy producers of ore. Faces of ore from 30 to 50 feet thick have already been exposed in the underground workings.

## MONTANA.

DEER LODGE COUNTY.

HOPE MINING COMPANY.—Official advices to us show that the production from January 1st to June 30th amounted to $104,355.84 in silver and $21,956.09 in gold, making a total of $126,311.93, for the first half of 1888.

WEST GRANITE MOUNTAIN MINING COMPANY.—It is said a number of the stockholders will unite in asking J. K. Pardee to resign the management of this company, not that they have lost confidence in his ability as a superintendent, but because they believe that with a change of officers it would be easier to raise the amount of money necessary thoroughly to test the capabilities of the mine. Mr. Leon Goldman, of St. Louis, has volunteered his services to go to Montana to examine into the financial condition of the company.

JEFFERSON COUNTY.

PARK MINING COMPANY.—Certificate of incorporation has been filed by this company, the object of which is the leasing or purchasing and mining ores of all kinds, particularly to mine the Park Quartz Lode mining claim. The capital stock is $150,000. The directors are B. F. Forbes, A. J. Seligman, C. W. Turner, H. E. Brunell, R. M. Calkings.

LEWIS & CLARKE COUNTY.

EMPIRE MINING COMPANY, LIMITED.—The Whippoorwill mine, property of this company, is looking better than it has. A new vein of ore has been struck in the main tunnel which will run about $20 in gold. It was struck about 600 feet below the surface.

## NEVADA.

ELKO COUNTY.

GRAND PRIZE MINING COMPANY.—The hoisting works are now running day and night, to relieve the mine from water and to enable the company to follow downwards the rich ore shown in the bottom of the winze from the 300-foot level. Work at this point was discontinued last winter from lack of fuel with which to keep the tanks going to their full capacity, but now that difficulty is obviated, and the mine will be kept well drained ahead of the workmen.

TUSCARORA WATER COMPANY.—This company has been incorporated with a capital stock of $500,000. The incorporators are Thomas Bell, Daniel Meyer, S. C. Bigelow, John F. Cassell and Presley C. Hyman. The object of the company is to bring pure mountain water into Tuscarora District from a source twelve miles away through a system of eight-inch pipe. The work of construction, under the superintendency of Herman Schussler, Engineer-in-Chief of the Spring Valley Water-Works, will begin at once. The company has purchased all the ranches and water rights along the route. Surveyors are already at work, and when their labors are completed half-mile contracts will be let for the excavation of the same. The pipe has already been contracted for and the entire work is to be completed by the first of October.

ESMERALDA COUNTY.

At Palmetto a new leaching plant is being put up. Cornish rolls will be used in connection with pans and settlers. It is calculated to work about 15 tons of ore per day.

STOREY COUNTY—COMSTOCK LODE.

From the Virginia City *Chronicle* we take the following:

The project of sinking a shaft to bed rock on the gravel deposit on the flat east of the mouth of Six Mile Canyon is again being discussed. In 1878 a shaft was sunk at the mouth of Six Mile Canyon to a depth of 113 feet, when water was struck and the project of sinking to bed rock abandoned, as the funds of the proprietors were exhausted, and no greater depth could be obtained without pumping machinery. The material from the surface down to the water level was washed gravel boulders, none of them weighing above 200 pounds, and the most of them of the half the size of a brick. Good prospects in gold were found all the way down; in sinking the gold growing coarser as depth is attained. The largest piece taken out weighed the sixth of an ounce. The gold was worth about $13 per ounce. The proprietors who sunk the shaft abandoned the project reluctantly, confident that they would have found a rich deposit of gold if they could have sunk to bed rock. The shaft referred to has since been filled up by the wash of débris from the bed of Six Mile Canyon Creek.

CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.—During the week ended the 14th inst. 1162 tons of ore were shipped to the Morgan mill and 413 tons to the Eureka mill. The average assay value of all the ore worked at the above mills during the week, according to battery samples, was $38.03. Bullion shipped to the San Francisco office during the past week valued by assay at $68,806.80. Owing to the falling off of water in the Carson River, the crushing capacity of the Eureka mill has been greatly reduced. The California mill is being put in running order, and will begin crushing ore for this company on or before August 1st.

HALE & NORCROSS MINING COMPANY.—The bullion product of the mine for July will not fall far below $100,000, notwithstanding the curtailment of crushing power heretofore available. It is expected that the 20 stamps recently added to the complement of the Nevada mill will be dropping on Hale & Norcross ore early in August or as soon thereafter as the electric motor plant is in operation. A draft of miners employed in the ore stopes, necessitated by the curtailment of crushing power, will materially reduce the operating expenses of July below the usual monthly average.

SEGREGATED BELCHER MINING COMPANY.—There is an increase in the grade of ore developed in advancing an upraise above the 1300 level. The latest report from that part of the mine places the average value of the ore in the top of the raise at $50 per ton, while selected samples range far higher.

UNION CONSOLIDATED SILVER MINING COMPANY.—At the annual meeting held in San Francisco last week, the following officers were appointed: President, Robert Sherwood; Vice-President, Charles H. Fish; Secretary, James M. Buffington; Superintendent, D. B. Lyman, and treasurer, Nevada Bank. The secretary's report shows the following receipts and disbursements for the fiscal year ending July 16, 1888:

| RECEIPTS. | | DISBURSEMENTS. | |
|---|---|---|---|
| Cash on hand July, 1887 | $15,870.98 | Labor account | $29,762.03 |
| Cash with Supt | 49.15 | Supplies | 18,648.95 |
| Assessment account | 50,000.00 | Expense | 6,645.71 |
| Hoisting account | 12,122.94 | Taxes | 1,512.65 |
| Compressed air account | 2,577.38 | Water | 1,200.00 |
| Sundry expenses | 379.52 | Sundry expenses | 3,290.50 |
| | | Cash with Supt | 34.94 |
| | | Cash with Treas. | 19,725.17 |
| Total receipts | $80,999.95 | Total disbursements | $80,999.95 |

From the superintendent's report we take the following: "At the date of the last annual report the work of exploring the 1300-foot level was being carried on, and since that time all work has been confined to the level, and considerable development work has been done. On the 5th day of August, 1887, the joint Union and Mexican northeast drift reached the Union Consolidated south line, a total distance of 1044 feet from the Ophir shaft, the starting point. From this south line this northeast drift has been advanced in the same direction—in the Union Consolidated ground—a distance of 331 feet, and from the face of this drift a west cross-cut (No. 1) was run a distance of 170 feet, passing through hard porphyry its whole length. From this same northeast drift, at a point 100 feet north from our south line, a west cross-cut (No. 2) was started and has been run a distance of 320 feet. In this west crosscut, at a point 225 feet from the northeast drift, the porphyry changed from hard to soft; then came a clay separation, beyond which the crosscut passed through a quartz body, 25 feet in width, carrying gold and silver at all points, but not in paying quantity. In this quartz body one drift has been run in a northerly direction a distance of 73 feet, and one drift in a southerly direction a distance of 12 feet. All these openings have shown low assay values. From the northeast drift an east cross-cut (No. 1) started at a point opposite west cross-cut No. 2, has been advanced 133 feet, passing for the entire distance through a porphyry formation."

"I have no hesitation in recommending the opening of this company's ground from the 1465-foot station of the Ophir shaft. It is important that the ground at a greater depth should be prospected in the vicinity of the quartz which was passed through on the 1300-foot level."

The following statement, made in the last annual report, is equally applicable at the present time, viz.: "The arrangement made with the Ophir Company, by which the three companies, Ophir, Mexican and Union Consolidated work through the Ophir shaft, each bearing one-third of the shaft's expense, is still in force. This privilege results in a great saving of expense and is the most economical mode by which the mine of the Union Consolidated Company can be worked."

YELLOW JACKET MINING COMPANY.—The extraction of ore from this mine is suspended on account of the hanging up of stamps in the Santiago mill. Explorations are still in progress on the 1000 and 1200 levels, but the force of miners employed in the shops has been reduced.

WASHOE COUNTY.

GALENA CONSOLIDATED MINING COMPANY.—This company has been organized with a capital stock of $100,000; shares, $1 each, with the following trustees: E. D. Boyle, E. G. Stevenson, W. H. Armstrong and F. Fielding. The property to be operated is located near Steamboat Springs. The mine is owned by P. E. Shannon, who has bonded it to the above company for a certain consideration to be paid in one year from date. A road for hauling ore to the V. & T. Railroad line for shipment to Reno will be immediately constructed. The work of development will be superintended by Col. E. D. Boyle.

## NEW JERSEY.

WARREN COUNTY.

Work was resumed at the iron mines at Belvidere on the 16th inst., after a suspension of several weeks. The outlook for steady work is said to be encouraging. The company has a large amount of iron ore on hand.

## OHIO.

BLACK DIAMOND COAL COMPANY.—This company has leased 600 acres of land near Alliance and will commence at once developing it.

HOCKING COAL AND IRON COMPANY.—Mr. Jay O. Moss, of Sandusky, O., has consented to accept the presidency of the Hocking Coal and Iron Company, and Gen. Samuel Thomas, who has had no official connection with the company for the last two years, has agreed to take a seat in the board. The organization of the new board of directors, which was elected in May, has been delayed by inability to select a president agreeable to the different interests. Mr. Moss is largely interested in the coal and iron industries of Ohio.

CUYAHOGA COUNTY.

A vein of natural gas was struck on the 15th inst., in a well sunk in the southern suburbs of Cleveland, at a depth of 1800 feet. It is stated that the force of the escaping gas lifted the heavy drilling tools out of the well and hurled them high in the air, and a column of water shot up to a height of 60 feet.

## PENNSYLVANIA.

COAL.

The largest coal deal which has taken place in Youghiogheny Valley for a long time has just been closed. James Shields, a leading stockholder in the Osceola Coal Company, the largest operating along the river, sold his interest and retired. He goes to Mexico to develop mines in that country.

THOMAS LEHIGH COAL COMPANY.—Judge Arnold has granted an order dissolving this company, it having paid all State taxes and complied with all the requirements of the law.

OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to July 21st:

| | 1888. Gallons. | 1887. Gallons. |
|---|---|---|
| From Boston | 1,696,092 | 2,745,550 |
| Philadelphia | 62,783,364 | 84,188,674 |
| Baltimore | 5,773,922 | 5,372,549 |
| Perth Amboy | 12,922,174 | 9,278,499 |
| New York | 191,703,122 | 202,961,772 |
| Total exports | 272,879,174 | 304,547,044 |

The buying offices of the Standard Oil Company and its branches have been instructed to pay 18 cents a barrel premium on the oil produced in the Washington, Taylorstown and Shannopin fields, instead of 8 cents as heretofore. The premium on all other premium oils is increased from 8 to 13 cents. The Western and Atlantic Pipe Line Company has met the advance by a similar one. This means about $1000 a day extra for Washington County producers.

Press reports of July 21st state that there is great excitement in the oil regions over the revival of the

Pithole oil field. Pithole has for nearly a quarter of a century been considered a "sucked orange," and the oil right of 100,000 acres around the town would not have brought $100. Now the excitement is greater than in any other field in the region, not excepting Bakerstown. Black Bros. have been pushing the drill around Pleasantville so successfully that they have been encouraged to test the old Pithole region, and the result is one of the surprising things of the oil region. In this old and long since abandoned territory they now have seven wells that are good for 6,000 barrels a month. There is some difference of opinion regarding the sand, but it is probably a lower strata than the rich sand of 1865, that made Pithole the most famous city in the world, and gave it a population of 15,000 to 20,000 in a few months. Great activity is reported in the field among lease hunters, and a large production in this old field is expected within the next few months.

### UTAH.

On and after the 23d inst., the rate on bullion from Salt Lake City to the Missouri River will be $15 instead of $18 as heretofore.

DICKERT & MYERS SULPHUR COMPANY.—The sulphur mine is now closed, but the mill is working on stock already on hand, and the chambers are running on flour of sulphur.

GERMANIA SMELTING WORKS.—The smelter blew out its furnaces on the 18th inst., and shut down. It is expected that the other smelters will follow suit. It is stated that this action is forced upon the smelting managements by the disastrous freight rates exacted by the railroads. The rate on bullion has been $18 per ton, while the roads carry ore out for $12 per ton. Ores that come from Nevada and Utah points going East have a certain rate to Salt Lake, which is much lower than on ores landed in Salt Lake for the home smelters.

### WASHINGTON TERRITORY.

KITTITASS COUNTY.

A dispatch from Ellensburg says a fire on the afternoon of the 22d inst. destroyed the coal mining town of Roslyn, twenty-eight miles from that place, rendering the entire population of 1500 homeless. The wind was blowing fast at the time, and the town being without fire apparatus, nothing was saved. Nothing is left but the coal company's office and the depot.

### WEST VIRGINIA.

The State Convention of the Miners and Mine Laborers' Federation, held at Charleston, has fixed the price for opening rooms at $1 per yard, and the coal for any opening up to 10 feet wide; from 10 to 15 feet wide, 50 cents per yard; driving entry, $1.25 per yard, and if there is any stone to be removed $2.50 per yard; laying turn, $1 each; day labor, $1.75 per day: setting roof-posts in old work, 10 cents apiece, and break-throughs to full entry prices.

### WYOMING.

The Union Pacific coal mines at Rock Springs are still running to their fullest capacity, and are averaging 2100 tons of lump coal per day. This is all sold for commercial coal. Even with this great daily supply it is said orders cannot be regularly filled.

## FOREIGN MINING NEWS.

### JAPAN.

The first cargo of coal from Japan to the United States has arrived at San Francisco.

### MEXICO.

LOWER CALIFORNIA.

A correspondent at Ensenada, the chief town of the International Company's colony, writes to the Mexican *Financier* as follows: "At the present time the mining interest is receiving very considerable attention. Very rich discoveries have been made near San Quintin, Colnet and San Fernando. These discoveries are not only gold and silver—which are very rich—but also very valuable deposits of copper and iron ore, and I understand coal."

LAS CRUCES.—Reports from this mine show that gold is being found in excellent ore-bodies, and if a true vein is found, as is anticipated, the mine will be a bonanza.

LOS NUEVOS NUNAS DE SANTA MARIA GOLD AND SILVER MINING COMPANY.—Judge Cullen, in the Brooklyn Supreme Court, on the 16th inst., handed down a decision in the suit of Mrs. Mary Beadleston against Asbury Harpending, of New York, and John B. Allen, of Boston, for an accounting in the matter of this company, which the defendants organized with $25,000,000 capital stock in 1881, and induced the plaintiff to invest in the stock on the statement of Pierre Humbert, Jr., a mining engineer, that the mines were worth a fabulous amount. The Judge gave decision for the plaintiff with costs, ordering an accounting by the defendants, and the paying over of the profits above the cost of the mining property to the receiver. This suit is a test one, and upward of a million dollars depends upon it. This suit was begun December 30th, 1887, as reported in the ENGINEERING AND MINING JOURNAL of December 31st.

MEXICAN LAND AND DEVELOPMENT.—At a meeting of this company held in New York this week the following directors were elected: President, A. S. Cadwallader; Vice-President, E. A. Roller; Treasurer, John M. Philbin; Secretary, Herman G. Schanzlin; William Ward, John A. Foster and George Doerflinger. The company has been formed with the object of acquiring land grants and other privileges from the Mexican Government, with a view to developing that country by establishing railroads, canals and manufactures, and by trading. The capital stock of the company is $1,000,000; shares, $5 each.

SANTA CLARA.—Fourteen ounces of amalgam gold were recently taken from a ton and a half of rock at this mine in Las Cruces cañon. The vein at this mine is reported to be four feet in width, and a true fissure vein. There were, at last accounts, 30 tons of ore on the dump. The mine is owned at Ensenada.

TRIUNFO.—This mine, 35 mines inland from La Paz, ships about $45,000 worth of bullion per month to San Francisco.

### NEW MEXICO.

COLFAX COUNTY.

SPRINGER CEMENT COMPANY.—The kilns of this company at Springer have been fired up and the machinery started. The company already has orders on file amounting to some 25,000 barrels of cement. The whole plant, which is nearly completed, will cost $75,000, and have a capacity of 500 barrels per day.

## COAL TRADE REVIEW.

NEW YORK, Friday Evening, July 27.

### Statistics.

**Production Anthracite Coal** for week ended July 21st and year from January 1st:

| | 1888. Week. | 1888. Year. | 1887. Year. |
|---|---|---|---|
| TONS OF 2240 LBS. | | | |
| P. & Read. RR. Co.. | 146,616 | 3,109,024 | 4,281,227 |
| Cent. R. R. of N. J. | 132,170 | 2,860,336 | 2,723,183 |
| L. V. RR. Co. | 264,430 | 3,548,194 | 3,940,496 |
| D., L. & W. RR. Co. | 127,446 | 3,423,456 | 2,900 684 |
| D. & H. Canal Co.. | 82,093 | 2,284,803 | 2,021,903 |
| Penna. RR. | 76,994 | 2,168,076 | 1,675,681 |
| Penna. Coal Co. | 36,907 | 856,195 | 735,939 |
| Penna. Canal Co. | 13,537 | 210,174 | 182,692 |
| Total | 880,193 | 18,460,258 | 18,501,805 |
| Decrease | | 41,547 | |

The above table does not include the amount of coal consumed and sold at the mines, which is about six per cent of the whole production.

Production for corresponding period:

| | |
|---|---|
| 1883.....16,294,328 | 1885.....15,432,469 |
| 1884.....15,768,170 | 1886.....16,536,845 |

**Production Bituminous Coal** for week ended July 21st, and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

| | 1888. Week. | 1888. Year. | 1887. Year. |
|---|---|---|---|
| Phila. & Erie RR. | 963 | 34,629 | 7,356 |
| *Cumberland, Md. | 63,395 | 1,908,875 | 714,692 |
| *Barclay, Pa. | **3,200 | 101,717 | 112,869 |
| *Broad Top, Pa.* | | | |
| H. & Broad Top RR. | 5,236 | 196,490 | 187,088 |
| *Clearfield Region, Pa.* | | | |
| Snow Shoe | 2,391 | 72,718 | 93,754 |
| Karthaus (Keating) | 4,352 | 84,040 | 104,666 |
| Tyrone & Clearfield | 64,868 | 1,892,330 | 1,786,093 |
| Tipton | 810 | 31,855 | 55,130 |
| *Alleghany Region, Pa.* | | | |
| Gallitzin & Mountain. | 14,152 | 487,293 | 575,220 |
| *Pocahontas Flat Top Coal.* | | | |
| Norf'k & West. RR. | 30,934 | 882,134 | 636,310 |
| *Kanawha Region, W Va.* | | | |
| Ches. & Ohio RR. | †33,139 | 996,589 | 827,430 |
| Total | 223,440 | 6,688,670 | 5,151,008 |

* Tons of 2240 lbs.
† Week ended July 14th. ** Estimated.

WESTERN SHIPMENTS.

| | | | |
|---|---|---|---|
| *Pittsburg Region, Pa.* | | | |
| West Penn RR. | 8,600 | 220,432 | 172,368 |
| Southwest Penn. RR. | 1,836 | 75,999 | 70 839 |
| Pennsylvania RR. | 4,784 | 165,818 | 120,444 |
| *Westmoreland Region, Pa.* | | | |
| Pennsylvania RR. | 32,452 | 961,455 | 822,411 |
| *Monongahela Region, Pa.* | | | |
| Pennsylvania RR. | 10,521 | 231,118 | 225,789 |
| Total | 58,193 | 1,594,822 | 1,411,851 |
| Grand total | 281,633 | 8,283,492 | 6,562,859 |

**Production of Coke** on line of Pennsylvania RR. for week ending July 21st, and year from January 1st, in tons of 2000 pounds: Week, 73,529 tons; year, 2,132,926 tons; to corresponding date in 1887, 1,760,328 tons.

### Anthracite.

Business in this market continues very active, and the companies are endeavoring to deliver all coal sold at the old prices before August 1st, on which date the new rates go into effect. They are handicapped somewhat in their deliveries by a scarcity of cars. It is expected that next month the trade will be much less active, though possibly the demand will keep on at a fair rate.

Prices are very firm at the old rates, namely:

Broken, $3.85; Egg, $4.15; Stove and Chestnut, $4.50; Pea coal, $2.25@$2.40; Buckwheat, $1.85@$2.10.

### Bituminous.

No change in this market is reported. Inactivity and dullness continue to rule. No contracts are offered, and prices remain as heretofore quoted, namely, $2.60 f.o.b. for Baltimore and Georgetown, and $3.25 for New York harbor.

### Boston. July 26.

[From our Special Correspondent.]

We are passing through the usual experience here after the advance; business is temporarily checked, but not so much so as is sometimes the case. By accident or design the advance, coming a day or two earlier than was expected, caught the Boston dealers napping. A good many orders were to be put in just before the advance, but they waited too long. These orders and others will be withheld now for a time, but there is some movement, and quite remarkable to note, almost every one has faith in the strength of the situation. With a decent show of tact on part of the companies, prices ought to be well maintained at the advance, so the leading jobbers at this port say. Stocks are not light hereabouts, neither are they very large, and considerable coal must yet come forward. The strength of the market is noticeable chiefly in the large sizes, including stove. The small sizes are in greater supply at tidewater than the demand begins to call for. It is difficult to quote prices for pea and buckwheat sizes, as they vary considerably according to stocks which the company may have on hand. Lykens Valley coal seems to be as scarce as ever. Orders are only taken in sellers favor, that is to say, to ship it whenever it can be had and at price then current. The individual shippers are not being heard from in the market very much at present. Most of them are filling orders taken some time since. Possibly some cutting of rates will be heard from in that quarter during August until they have taken another batch of orders. The companies are not disturbed at any such prospect, however.

In the line of bituminous coal there is nothing to mention of special importance. The nominal quotations remain, viz.: $2.20@$2.60 f.o.b., and delivered rates readily obtained on the lowest basis.

A good feature of the market is the continued ease in freights, which, by the way, makes it easier for the companies to obtain their advance in the f.o.b. prices of anthracite. We quote exclusive of discharging: New York, 70@80c.; Philadelphia, 85@90c.; Baltimore, $1@$1.05; Newport News and Norfolk, 85@95c.; Richmond, $1.15: Provincial, $1.60@$1.75.

There is a first rate retail trade at former figures. Mr. Geo. H. Keyes, who is the "Boston Coal Co." before alluded to as having taken a large slice of the city contract, is erecting sheds on his recently rented wharf, and is already delivering coal on city contract, notwithstanding there have been rumors that he had not filed bonds, etc., etc.

Pocket prices as they now stand after the advance of a few days since are:

| | Broken. | Egg. | Stove. | Nut. | Pea |
|---|---|---|---|---|---|
| Hard White Ash | $5.20 | $5.40 | $5.60 | $5.50 | $3.75 |
| Free White Ash | 5.00 | 5.25 | 5.60 | 5.50 | 3.75 |
| Lykens Valley | 6 25 | 6.75 | 6.75 | | |

### Buffalo. July 26.

[From our Special Correspondent.]

No changes to record in the trade in coal or coke this week.

The principal topic of the week was the announcement that "The Central Dock and Terminal Company" had been organized in this city, with a capital of $500,000. The directors are Chauncey M. Depew, of New York; Austin Corbin, of Philadelphia; A. A. McLeod, of Philadelphia; Gen. George J. Magee, of Watkins; Sherman S. Jewitt, of Buffalo; J. J. Albright, of Buffalo, and C. J. Langdon, of Elmira.

At a meeting held in Buffalo the following officers were elected: President, Gen. George J. Magee; Secretary and Treasurer, Frank H. Snell, of the firm of Albright & Co. The company is organized for the purpose of handling and shipping by lake Reading and other anthracite coal coming over the New York Central and West Shore railroads. The office of the company will be at the office of Albright & Co., in the Chapin Block.

The Reading Company delivers and ships a large amount of coal here and have been and are now paying a heavy royalty for the use of the docks of the Lehigh, Erie and Pennsylvania coal companies. Several sites have been spoken of for the new concern but nothing definite has been announced from headquarters, excepting that the work will be completed in time for the opening of navigation in 1889.

Messrs. Thomas Loomis & Co. has secured the contract for furnishing the poor department of our city with stove and nut coal for one year at $5 per ton delivered.

The H. E. Wick & Co. Coal and Iron Ore Company have planned the construction and equipment of a large dock here on the Blackwell Canal, to be used for receiving ore from lake vessels. The dock will be 1400 feet frontage and 200 feet deep, and have a capacity of about 100,000 tons. The contract has been let a portion of the work will be in readiness to receive ore on August 9th. The officers of the company are H. E. Wick, President; T. Guilford Smith, Vice-President, and W. D. Ward, Secretary and Treasurer, and they expect largely to increase their trade in bituminous coal in addition to this venture.

Lake freights to Western ports remain as per last report, excepting that the rates to Chicago and Milwaukee declined 10c. on Monday last, and a weak feeling is manifested with regard to Lake Superior ports. Closing this morning weak. The shipments from July 19th to 25th, both days inclusive, were 67,450 net tons, namely: 19,610 to Chicago, 7300 to Milwaukee, 11,280 to Duluth, 5600 to Superior, 750 to Racine, 1840 to Green Bay, 5630 to Ashland, 2150 to Washburn, 4380 to Toledo, 1250 to Saginaw, 150 to Port Arthur, 1256 to Marinette, 550 to Sheboygan, 350 to Kenosha, 300 to Pt. Clinton, 1380 to Port Huron, 450 to Marquette, 30 to Pt. Dover, 700 to Escanaba. Total shipments thus far this season, 1,077,925 net tons, including vessels for Tonawanda not reported at Custom House.

The rates of freight were as follows: 85@75c. to Chicago, 80@70c. to Milwaukee, 65c. to Duluth, Superior, Ashland and Marquette, 75c. to Escanaba, 50c. to Toledo and Port Clinton, to Racine, 75c. to Green Bay and Portage, 65c. to Washburne, 50c. to Algonac, Marine City and Saginaw, 70c. to Port

Arthur, 85c. to Marinette, 80c. to Sheboygan, 80c. to Kenosha, 40c. to Port Dover, and 40c. to Bay City.

Receipts of coal by canal, third week in July, at this port, 7710 net tons; shipments, 414 net tons. The troubles on the canal ceased last Tuesday afternoon; boats commenced moving. In freights reported on coal the two loads were shipped on owners' account or on private terms.

It is rumored that the four propellers ordered to be built by the Detroit Dock Company, to be ready for navigation next spring, are for the Reading Coal Company, and will be the necleus of another lake line of vessels.

The action of the Kansas Railroad Commissioners in suggesting to the railway companies of the State the advisability of notifying dealers to lay in supplies of coal early in the season should be supplemented by a similar movement in all the North and Northwestern states and territories.

### Pittsburg.

July 26.

[From our Special Correspondent.]

There remains a steady demand for coal. The late coal run cleared the pools pretty much of all the coal that was loaded. The run was both large and successful with few exceptions. The boats have all returned with empties, which have been forwarded to the pools. This will give employment to the miners for some time. The lower markets are well stocked.

PRICE OF COAL PER 100 BUSHELS = 7600 LBS.

| | | | |
|---|---|---|---|
| First pool | $4.75 | Fourth pool | $3.25 |
| Second pool | 4.25 | Railroad coal | 5.00 |
| Third pool | 3.75 | | |

*Connellsville Coke.*—We have no change to note in the situation. As most of the furnaces will soon resume operations the general opinion is that there will be an advance soon. The weekly output shows an increase, and the prospects are brighter. The rates and freights are as follows:

Blast Furnace, $1 per ton; to dealers, $1.10; foundries, $1.15.

*Freight rates* to Pittsburg, 70c. per ton; to the Mahanoy and Shenango valleys, $1.35; East St. Louis, $3.20; to Cleveland, $2.80; to Chicago, $2.75; to all other points the same proportions.

The experiment to sell Connellsville coke in Newfoundland has proved successful, and an order for 2000 tons has just been given. It has been calculated that it can be delivered at a little over $5 per ton.

## FREIGHTS.

**From Philadelphia to:**—Alexandria, .85; Annapolis, .65; Bangor, 95*; Bath, Me., .95; Beverly, 1.05*; Boston, .90*; Cambridgeport, Mass., 1.17½; Charlestown, *.75@80; Charleston, .75@80;; Com.' Point, Mass., 1.00@1.05*; East Cambridge, 1.05; Fall River, *85@.90*, Gardner, Me., 1.00*; Gloucester, 1.05*; Hingham, 1.50*; Lynn, 1.10@1.30*; Marblehead, 1.10*; Milton, 1.20*; New Bedford, .85@.90*; Newburyport, 1.15* ; Newberne, .80; New Orleans, 1.25*; New York, .90†; Norfolk, .65@.70; Portland, .90*; Portsmouth, N. H., 1.00*; Providence; .85@.90*; Quincy Point, 1.05*; Richmond, Va., .70@.75; Saco, Me., 1.15@1.25*; Salem, Mass., .90*; Saugus, 1.20*; Savannah, 1.00; Washington, .85; Wilmington, N. C., .85.

**From Baltimore to:**—Bangor, Me., 1.00; Bath, 1.10; Boston, 1.00; Bridgeport, Conn., .85; Brooklyn, .85; Charleston, .75@.80; Fall River, .90; Galveston, 3.00; New Bedford, .85; Newburyport, 1.25@1.30; New Haven, .25; Lynn, 1.20; New London, .90; New York, .85; Portland, 1.00; Portsmouth, N. H., 1.00; Providence, .85; Quincy Point, 1.05; Richmond, Va., .60; Salem, Mass., 1.00; Savannah, 1.00@1.05; Somerset, .85@.90; Williamsburgh, N. Y., .85@.90; Wilmington, 1.00@1.10.

**From New York to:**—Bath, Me., 85*; Beverly, .85*; Boston, .80*; Bridgeport, Conn., .60; Cambridge, Mass., .80*3c; Cambridgeport, .80*3c.; Chelsea, .80*; Com. Pt., Mass., .80*; E. Boston, .80*; E. Cambridge, .80*3c.; E. Greenwich, R. I., .75; Fall River, .80; New Bedford, .85@.90; Newburyport, 95*; New Haven, .60; Newport, .75; New London, .70@75; Norwalk, Conn., .55@.60; Portland, .80*; Portsmouth, N. H., .90*; Providence, .75; Salem, .80*.

* And discharging. 3c. per bridge extra. † Alongside ‡ And towing.

## MARKETS.

NEW YORK, Friday Evening, July 27.

**Copper.**—The market has been quite lifeless during the week, and business has been almost at a standstill. The general position is unaltered and the syndicate are complete masters of the situation. The renewed negotiations with the general body of consumers appear not to have arrived at any definite results as yet, but it is expected that a sale will be made for deliveries over the next four months at 16½c., with the same conditions and restrictions as in the former pool sale. We close spot, July and August, 16·85; September, 16·70; October and November, 16·60; December, 16·50; January, 16·25.

This great difference between the price of spot and forward Chili bars, which existed in the London market a short time ago, seems to have created quite a panic out in Chili, where sales were pressed down as low as £71 c.i.f., and it is now believed that the Chilian smelters will after all come to an arrangement with the syndicate if the latter will fix a reasonable price for bars.

In London a further advance has to be recorded in spot Chili Bars, which close to-day at £81 5s., and this is doubtless owing to covering by shorts. Futures remain unchanged at £78 5s.@£78 10s. The business in "G. M. B." (good merchantable brands) has assumed larger proportions at prices ranging between £72@£74.

The syndicate has lately concluded a few more contracts with some of the smaller producers to buy their output for the next 1 or 2 years, and they are vigorously continuing their efforts to absolutely secure the control of the world's supply.

The exports of copper from New York during the past week were as follows:

| | | | | |
|---|---|---|---|---|
| To Liverpool— | Matte. | | Lbs. | |
| By S. S. Arizona | Bbls. | 115 | 138,340 | $8,000 |
| By S. S. Republic | Sacks | 4,392 | 520,000 | 26,030 |
| | Copper. | | | |
| By S. S. Germania | Bars | 721 | 112,119 | 15,000 |
| By S. S. Sorrento | Casks | 111 | 138,750 | 21,000 |
| S. S. Republic | Pigs | 742 | 112,160 | 16,000 |
| To Havre— | | | | |
| By S. S. La Bourgogne | Casks | 194 | 285,000 | 106,298 |
| | Pigs | 1,395 | 448,828 | |

**Tin.**—Prices in this market have experienced some important fluctuations. In the early part of the week, although the London quotations only relapsed about £1 per ton, prices here declined ·6 c. This was caused by some of the smaller holders on this side becoming afraid of a further decline and consequently accepting prices about £2 per ton less than the cost of importing the metal. During the last few days a steadier tone has been observable, and our prices have approached somewhat nearer to the London parity. The feeling with regard to the future of the tin market is very uncertain. Everybody seems disposed to keep aloof until it becomes more apparent who are at the bottom of the present manipulations, and to what extent they are involved. On this depends the future course of the market. Our present quotations are: Spot, 19·50; July, 19·50; Aug., 19·30; Sept., 19·30.

**Lead.**—The market remains very steady, buyers and sellers apparently awaiting further developments before acting. Speculators have, however, made strong efforts during the last few days to bring about an advance in prices, with very small success, however, the general feeling being that large quantities will probably be thrown in the market again as soon as a somewhat higher range of quotations is reached. Consumers still show great reluctance to buy, and as to prices their views are from ⅛@¼c. below present quotations. Our official closing prices are: Spot, 3·90; July, 3·90; August, 3·92½; September, 3·95.

The London market has also fluctuated a little, falling to £13, and rising again to $13 2s. 6d., at which latter quotation it closes to-day.

Messrs. Everett & Post, of Chicago, telegraph to-day as follows: Since our last report sales of both soft and hard lead have been more free and general, and several hundred tons have been purchased at 3·85@3·92½c. There is a general disposition to buy at present prices, as the stocks in the hands of holders are limited, and refiners' offerings are very light. Consumers report promising outlook.

Messrs. John Wahl & Co., of St. Louis, telegraph to day as follows: The market has been a trifle firmer during the week, and there is a disposition to buy at present prices. Sales for the week aggregate in the neighborhood of 700 tons at prices ranging from 3·77½@3·82½c.

**Spelter.**—Steady at 4·55 to 4·60.

ZINC PRODUCTION IN SILESIA.—The output in the first quarter of the current year amounted to 20,999 tons, against 20,478 tons in the same period of 1887. The deliveries in the first quarter amounted to 19,727 tons, valued at £315,164, against 16,805 tons last year, valued at £219,033. As the number of workmen employed has increased only from 6047 to 6269, the augmented value represents a wider margin of profit. The exports from the whole of Germany have decreased compared with last year, the quantities for the first four months being, for spelter and scrap zinc, 14,911 tons, against 15,934 tons, and for rolled zinc 3483 tons, against 5425 tons.

**Antimony.**—Dull at 9·70 for Hallett & Co.; 12c. for Cookson.

**Chemicals.**—There are few changes to record in this line for the past week. The market has been firm, and considerable inquiry for goods is noticed, but in point of actual business transacted there is little improvement.

Caustic soda ash, 48 per cent, is not particularly active. Something has been done in future shipments, but not sufficient to warrant the statement that business is good; 1·20c. might be accepted on large orders for forward delivery, but lots to arrive nearby are quoted at 1·25. The quantity on the spot continues very small and is held at 1·35.

For carbonated soda ash, 48 per cent., there has been some inquiry, but we hear of no sales of importance. Prices are exceedingly well maintained, and the market may be written firm. We quote forward shipments at 1·25@1·27½, according to quantity, date of shipment, etc. For goods on the spot in small lots, 1·35@1·37½ is still demanded. Very little business is done at these figures.

For caustic soda of all grades there is next to no demand, and figures are more or less nominal. We continue our last week's quotations, 60 per cent at 2·30@2·35; 70 to 74 per cent, 2·20@2·30, on basis of 60 per cent.

English sal soda is in fairly good demand, and very little is obtainable on the spot. The small quantity available is held at 1·15@1·20, as to quantity, etc. The quotations on lots to arrive are ·95@1c., according to locality, etc.

American sal soda is also doing well, and is firmly held at manufacturer's prices.

Bleaching powder continues dull, though the rather light stock warrants the maintaining of prices in these. There is no alteration since our last, 1·87½@1·92 being the figures quoted.

The acid market is practically without change. Acetic acid is selling in a small way for consumers' immediate wants, but we hear of no large orders as yet. We continue to quote 2¼@2½c. per lb.

Sulphuric acid is in the same uneventful position—very little doing beyond a jobbing trade. Prices are without change, viz., 90@95c. per cwt. for large lots of 66 degrees acid, and $1@$1.10 for smaller quantities.

Oxalic acid continues very quiet with no appreciable change in quotations, which are held at 6½@7 according to quantity, etc. Doubtless a large buyer could get the inside figure shaded somewhat.

The fertilizing chemical market is in about the same condition as last week. The demand for ammoniates continues good, but phosphates are not attracting much attention. We continue our quotations of the principal fertilizing chemicals as follows: Dried blood (city), low grade, 2·30@2·32½ per unit. Western high grade, finely ground, 2·35@2·40 per unit. Tankage, high grade, $24@$25 per ton; low grade guaranted 25 per cent bone phosphate and 7 per cent ammonia, $22@$23 per ton. First scrap, $24@$25 per ton f.o.b. factory; sulphate of ammonia, 3.15@3.20 per cwt.; steamed bones, $20@$22 per ton dried. Charleston Rock is $6 per ton for dried and $5 per ton for undried, both f.o.b. at mines. Refuse bone black is $18@$19 per ton, guaranteed over 70 per cent bone phosphate. Dissolved bone black is 90c. per unit for available phosphoric acid and acid phosphate 75c. per unit for available phosphoric acid. High grade sulphate of potash is 2.20 on basis of 90 per cent.

Double manure salt is in moderate demand, and quotations are firmly at 1·05@1·10 as to quantity, etc.

Muriate of potash continues quiet but firm. We continue to quote 1·80 as a fair market value.

Kainit is without change, and, though the demand is fair, we note no change in quotations, which are $11.50 for small quantities ex store, and for shipment $9.50@$10 per ton.

Brimstone is in somewhat better demand than last week, and the market has braced up somewhat. Goods on the spot are offering at $21@$22 per ton for best unmixed seconds, to arrive near by, $21. Futures are held at $19.50@$20 per ton, according to quantity, date of shipment, etc. The sales of brimstone for past two weeks aggregate some 5000 tons, most of the business being done during the current week.

Nitrate of soda is in quite fair demand, though we note no stiffening of prices, which are 2c. on the spot; 1·95 to arrive. Sales of past week 10,000 bags, spot; 20,000 bags to arrive.

William T. Coleman, of the firm of William T. Coleman & Co., of San Francisco, to whose failure we referred in our issue of May 12th, has sent a proposition to all the creditors to settle at 40 cents on the dollar of the indebtedness. Ten per cent of this will be paid in cash, while the remainder will be distributed through three yearly payments with interest. Furthermore, a division was to be made whenever 5 per cent of the indebtedness is on hand, irrespective of time. The schedule filed two months ago shows total liabilities $2,919,993. The assets were first thought to greatly exceed this amount, but are now known to be overestimated. The assignees believe the proposition will be accepted by the creditors and that the firm will resume business. This firm own, as will be remembered, the Meriden and Harmony borax companies and the California Chemical Works.

The following table shows the total exportation of nitrate from Chili from January 1 to April 31:

| | 1886. | 1887. | 1888. |
|---|---|---|---|
| United Kingdom or Continent for orders | 1,346,667 | 1,505,508 | 1,748,184 |
| Direct Port United Kingdom | 21,831 | 105,771 | 112,353 |
| Hamburg | 205,282 | 576,669 | 286,918 |
| Antwerp | ..... | 57,860 | 62,040 |
| Rotterdam | 45,360 | 44,686 | ..... |
| France | ..... | 169,295 | 138,437 |
| Mediterranean | 57,298 | 102,136 | 60,281 |
| U. S., East Coast | 422,437 | 663,209 | 661,042 |
| San Francisco, Cal. | 60,515 | 95,608 | 67,090 |
| Other countries | 21,598 | ..... | ..... |
| Total Spanish qt'ls | 2,180,988 | 3,311,742 | 4,136,719 |

## IRON MARKET REVIEW.

NEW YORK, Friday Evening, July 27.

There is hardly any change to record in the general condition of the iron market, which continues very quiet, with dullness prevailing in most departments.

Sales of pig-iron continue in a moderate way. On the whole a decidedly firmer feeling prevails in prices. Although some furnaces are piling up iron, yet there has been no such accumulation of stocks as would not be needed to supply even a moderate increase in the demand. Quotations are the same as for several weeks past for Lehigh and Hudson River and most Southern brands. The only irons really forced upon the market of late have been some Ohio brands, which are said to have been peddled out in a small way at decided concessions.

Scotch irons are almost lifeless, it being next to impossible to sell them here at cost of importation.

The same is true of Bessemer pig.

Foreign could not be sold to cover cost, and domestic is without sale at present, and quoted nominally very low.

Steel Rails are still quoted nominally at $30 at mill, but it is generally understood that this figure would be shaded, in some cases considerably. The only sale

reported this week is one of 4500 tons for delivery at Montgomery, Ala. The price is not given, but it must have been decidedly lower than $30 at mill.

There is no new activity, and nothing of interest to note in other departments of the iron trade. Old materials are very dull. Old tee rails are quoted nominally $20, with neither buyers nor sellers anxious for business at that figure.

While the Pittsburgh mills have generally signed the scale of wages laid down by the Amalgamated Association, yet there has been a new departure in two cases of mills which are making a determined effort to "run their own business," namely, Singer, Nimick & Co., who have started so successfully with non-union men that their old hands are leaving the labor unions and returning to work on the company's terms; and the Spang steel mill, which will be started in a few days with non-union men. All this activity at Pittsburg may be taken, as we pointed out two weeks ago, as an indication of the hopefulness of the mil owners for at least a fair iron trade in the near future.

### Louisville. July 24.

[Special report by Messrs. HALL BROTHERS & Co.]

The market is active and consumers are offering orders liberally. The disposition among the buyers now is to place orders for delivery as far ahead as possible, though there are few furnaces that are willing to enter orders for shipment beyond three or four months hence, and, with few exceptions, adhere strictly to this principle in selling, and in consequence the buyers in most cases have had to come to the seller's views in the matter of delivery. Prices continue steady and firm, and it is believed that an advance will soon occur, and, in fact, some sellers have already shown a disposition to advance.

Quotations for cash f.o.b. cars at Louisville will be found in our weekly register of prices.

### Pittsburg. July 26.

[From our Special Correspondent.]

The healthy condition of the iron market reported in our last issue continues, with an exceedingly good demand for standard and well-known brands. The advance being well maintained, there was no sign of a let down in prices; in fact, the indications point the other way. The volume of sales last week exceeded 40.000 tons, the largest, with one exception, ever published. The present week will not show up so large from the fact that certain parties refuse to enter further orders at this time, preferring to deliver what they have already sold first. Bessemer pig was in good demand, several thousand tons were disposed of, and several lots more will be as soon as buyer and seller have come to a mutual understanding. In regard to the present value, several leading furnace men remarked that few sales will be made at present prices.

Of course there are other parties who still have iron for disposal. Parties, however, who have been holding off for lower prices would do well to change their opinion. Furnace men and others have fully made up their minds that they must have sure money for iron, as this thing of selling iron below cost will not be indulged in, at least for some time to come. The market shows a better tone all round. Things have changed. Instead of sellers doing the traveling, buyers find it convenient to pay sellers a friendly call and talk about the situation with an occasional reference to the iron trade. In regard to the future, there is a good deal of inquiry by consumers, and as most of them are nearly bare of stock, it seems pretty certain that buying can not be deferred much longer. This, of course, means better prices in the very near future, and dealers may make up their minds that pig-iron has seen its lowest price for 1888.

*Coal and Coke Smelted Lake Ore.*

| | |
|---|---|
| 1300 Tons Gray Forge at Furnace | 14.00 cash. |
| 1000 Tons Gray Forge, Delivered | 14.35 cash. |
| 1000 Tons White and Mottled Bessemer | 15.00 4 mo. |
| 1000 Tons Bessemer | 17.25 cash. |
| 1000 Tons Bessemer | 17.25 cash. |
| 1000 Tons Gray Forge | 14.25 cash. |
| 1000 Tons Gray Forge | 14.25 cash. |
| 750 Tons Gray Forge | 14.40 cash. |
| 500 Tons Gray Forge | 14.25 cash. |
| 500 Tons Bessemer | 17.25 cash. |
| 500 Tons Close Gray No. 3 | 15.75 4 mo. |

*Coke, Native Ore.*

| | |
|---|---|
| 500 Tons Gray Forge | 14 50 4 mos. |
| 300 Tons Gray Forge | 14.25 cash. |
| 200 Tons open Gray Forge | 14.75 cash. |
| 50 Tons Silvery | 16.00 cash. |
| 50 Tons No. 2 Foundry, all ore | 18.00 cash. |

*Charcoal.*

| | |
|---|---|
| 500 Tons No. 1 Foundry | 23.50 4 mos. |
| 125 Tons No. 2 Foundry | 22.75 4 mos. |
| 100 Tons No. 1 Foundry | 23.50 4 mos. |

*Steel Slabs and Billets.*

| | |
|---|---|
| 1000 Tons Billets delivered | 28.50 cash. |
| 1000 Tons Nail Slabs | 28.50 cash. |
| 1000 Tons Billets delivered | 28.50 cash. |
| 1000 Tons Billets delivered | 28.50 cash. |
| 750 Tons Nail Slabs delivered | 28.75 cash. |

*Muck Bar.*

| | |
|---|---|
| 1000 Tons Neutral delivered | 26 75 cash. |
| 500 Tons Neutral delivered | 26.75 cash. |
| 500 Tons Neutral delivered | 26.75 cash. |

*Scrap Material.*

| | |
|---|---|
| 150 Tons Hammered Iron Car Wheels | Net 25 00 2 mo. |
| 150 Tons No. 1 Wrought Scrap | Net 19.00 cash. |
| 150 Tons Cast Scrap | Gross 15.00 cash. |
| 150 Tons Cast Borings | Gross 11.50 cash. |
| 100 Tons Mixed Steel Scrap | Gross 16 00 cash. |
| 100 Tons No. 2 Wrought Scrap | Net 17.00 cash. |
| 100 Tons Wrought Turnings | Net 14.00 cash. |

### Philadelphia. July 27.

[From our Special Correspondent.]

There has been some more buying of pig-iron this week and a good deal more inquiry for it. The underlying idea in the market just now is that there may be and probably will be an increasing demand during August by way of anticipating fall requirements. There is as yet no perceptible change in quotations, nor have any large orders, outside of one or two for pipe, been placed; but there is considerable inquiry of a general nature. The stronger companies have boldly refused to make a single concession. Poor makes can be had as cheap now as at any time. The fear of Southern iron is expressed occasionally. Foreign material is not selling, nor is it asked for, and dealers scarcely know the best they might be able to do. Both domestic and foreign blooms are quiet. Several offers were made

## IMPORTATIONS AT NEW YORK FROM JULY 19 TO JULY 24, AND FROM JAN. 1 TO SAME DATE.

| Spelter. | Week. Tons. | Year. Tons. |
|---|---|---|
| American Metal Co., Lt. | | 247 |
| Friedensville Zinc Co. | | 24 |
| Hendricks & Bros. | | 28 |
| Lewisohn Bros. | | 33 |
| Naylor & Co. | 28 | 131 |
| Osgood, F. | | 83 |
| Perkins, C. L. | | 725 |
| Pope's Sons & Co. | | 28 |
| Total | 28 | 1,298 |
| Corres. date 1887 | 325 | 2,215 |
| **Zinc Sheets.** | **Tons.** | **Tons.** |
| G. A. & E. Meyer | 1 | 1 |
| H. Lemanche's Sons | | 594 |
| Milne & Co. | | 1 |
| Naylor & Co. | 56 | 81 |
| Total | 57 | 677 |
| **Nickel.** | **Lbs.** | **Lbs.** |
| McCoy & Sanders. | 5,000 | 148,316 |
| Total | 5,000 | 148,316 |
| **Antimony.** | **Casks.** | **Casks.** |
| Total | | 1,820 |
| Corres. date 1887 | | |
| **Pig Lead.** | **Tons.** | **Tons.** |
| Caswell, E. A. | | 46 |
| N. Corwith & Co. | | 111 |
| Hendricks Bros. | | 100 |
| Total | | 257 |
| Corres. date 1887 | | 603 |
| **Tin.** | **Tons.** | **Tons.** |
| Abbott & Co., Jere. | | 3,448 |
| American Metal Co. | | 35 |
| Birdwell & French | | 89 |
| Crooke S. & R. Co. | | 131 |
| Davol & Sons | | 8 |
| Dickerson, Van Dusen | | 10 |
| Fuech, Edye & Co. | | 10 |
| Hendricks Bros | | 106 |
| Knauth, W. & K. | | 21 |
| Lewisohn Bros. | | 15 |
| Muller, Schall & Co. | 280 | 3,332 |
| Naylor & Co. | | 824 |
| Phelps, Dodge & Co. | | 381 |
| Pope's Sons & Co | | 57 |
| Schwarer Bros. | | 7 |
| Thomsen & Co., A. A. | | 6 |
| Thomson & Co., D. | 12 | 181 |
| Total | 292 | 8,661 |
| Corres. date 1887 | 391 | 6,499 |
| **Tin Plates.** | **Boxes.** | **Boxes.** |
| American Metal Co. | | 301 |
| Bridge & Beach Mfg. Co. | 339 | 339 |
| Bruce & Cook | 1,272 | 62,523 |
| Byrne, James | 500 | 16,450 |
| Central Stamping Co. | | 19,781 |
| Coddington & Co., T. B. | 5,276 | 91,723 |
| Corbierre, Fellows & S. | | 1,419 |
| Cort & Co., N. L. | 500 | 62,822 |
| Cons. Fruit Jar Co. | | 849 |
| Crooks & Co., Robert | 1,183 | 36,670 |
| De Mill & Co., H. R. | 1,559 | 12,468 |
| Dickerson, Van Dusen | 4,039 | 152,357 |
| Dolly, T. G. F. | | 112 |
| Iron Clad Mfg. Co | | 119 |
| Lalance & Grosjean | 5 | 960 |
| Lombard, Ayres & Co. | 1,000 | 9,978 |
| Merchant & Co | | 11,241 |
| Mersick & Co., C. S. | | 4,042 |
| Morewood & Co., G. | | 23,839 |
| Naylor & Co. | | 8 899 |
| Newall Bros. | | 158 |
| Phelps, Dodge & Co. | 2,806 | 385,959 |
| Potts, W. A., Son & Co. | | 573 |
| Pratt Mfg. Co. | | 92,075 |
| Shepard & Co., Sidney | | 71,163 |
| Stroud & Co | | 686 |
| Taylor, N. & G. | | 295 |
| Thomsen & Co., A. A. | | 76,343 |
| Warren & Co | | 1,065 |
| Wheeler & Co. | 470 | 2,152 |
| Whittemore & Co., H. | | 38,821 |
| Wolff & Reesing | 694 | 19,288 |
| Wright & Sons, Peter | | 165 |
| A. M. Underhill | 21 | 21 |
| Total | 19,664 | 1,207,646 |
| Corres. date 1887 | 63,565 | 1,145,876 |
| **Pig-Iron.** | **Tons.** | **Tons.** |
| Abbott & Co., Jere | | 600 |
| Austin, B. & Co | | 100 |
| Baldwin Bros. & Co. | | 100 |
| Bartlett & Co., N. S. | | 3,200 |
| Crocker Bros. | | 6,400 |
| Crooks & Co., R. | | 700 |
| Dana & Co. | | 400 |
| Downing & Co. | | 51 |
| Drum'nd, McCall & Co. | | 20 |
| Erie Despatch | | 250 |
| Henderson Bros | | 1,375 |
| Holt, H. N | | 50 |
| Lee & Co., James | | 325 |
| Milne & Co., A. | | 901 |
| Naylor | 1,643 | 4,458 |
| Pierson & Co. | | 15 |
| Page, Newell & Co. | | 13 |
| Sanderson & Sons | | 2 |
| Stetson & Co., G. W. | 100 | 10,557 |
| Tonsila, M. R. | | 120 |
| Walbaum, W. H. | | 200 |
| Williamson & Co., Jas. | | 2,300 |
| Total | 1,743 | 32,127 |
| Corres. date 1887 | 4,109 | 90,347 |

| Copper. | Week. Pounds. | Year. Pounds. |
|---|---|---|
| Lewisohn Bros. from Liverpool | 55,824 | 111,824 |
| **Steel Sheets, Billets, Forgings, etc.** | **Tons.** | **Tons.** |
| Abbott & Co., Jere. | 120 | 1,755 |
| Arkell, Jas. | | 17 |
| Belcher, H. U. | 6 | 11 |
| Bowker, C. F. | | 216 |
| Bruce & Cook | | 7 |
| Carey & Moen | | 24 |
| Carter, G. T. | | 273 |
| Cohn, M. | 4 | 129 |
| Cooney, D. J. | | 20 |
| Crooks, R. & Co. | | 659 |
| Crousbey, H. | | 236 |
| Dana & Co. | | 51 |
| Downing & Co., R. F. | 3 | 246 |
| Henderson Bros. | | 31 |
| Holt, H. N. | | 6 |
| Hondolette & D. | | 106 |
| Hugill, Chas. | 5 | 111 |
| Lalance & G. Mfg. Co. | | 229 |
| Lazard Freres | | 50 |
| Leng, J. S. | | 22 |
| Lebenberg, N. | | 36 |
| Littlejohn, Jas. | | 40 |
| Lundberg, G. | | 100 |
| Mersick & Co. | | 124 |
| Milne & Co., A. | | 1,085 |
| Montgomery & Co. | | 52 |
| Moore's Son & Co. | | 25 |
| Muller, Schall & Co. | | 5 |
| Manas, J. & Son | | 10 |
| Naylor & Co. | 20 | 5,395 |
| Newton & Shipman | | 45 |
| Ogden & Wallace | 21 | 202 |
| Phelps, Dodge & Co. | | 3 |
| Phœnix Steel Co. | | 20 |
| Pierson & Co | 21 | 650 |
| Pilditch, F. S. | | 188 |
| Power, C. W | 5 | 47 |
| Prosser, Thomas | 50 | 1,877 |
| Roebling's Sons, J. A. | | 350 |
| Sanderson & Son | | 42 |
| Shotts Iron Co. | | 15 |
| Strouse & Co. | | 25 |
| Temple & S. | 2 | 8 |
| Union Bridge Co | | 288 |
| Wagner, W. F. | 15 | 726 |
| Walbaum, W. H. | | 2,479 |
| Walschid, C. A. | | |
| Wallace, W. H. & Co. | | 41 |
| Webb, J. B | | 1 |
| Whiting, E. W. | | 11 |
| Whitney & Co. | | 27 |
| Wilson, J. G. | | 10 |
| Whittemore & Co | | 6 |
| Wetherill & Co | | 2 |
| Wolff, R. H | | 150 |
| Wright's Sons & Co. | | 10 |
| Total | 272 | 18,305 |
| Corres. date 1887 | 2,808 | 48,810 |
| **Bar-Iron.** | **Tons.** | **Tons.** |
| Abbott & Co., Jere | 190 | 1,858 |
| Abeel Bros. | | 3 |
| Bacon & Co. | | 13 |
| Downing & Co. | | 139 |
| Jacobus, E. Y. | | 12 |
| Lilienberg, N. | | 5 |
| Lundberg, Gustaf | 187 | 449 |
| Milne & Co., A. | | 95 |
| Naylor & Co | | 25 |
| Ogden & Wallace | 4 | 4 |
| Page, Newell & Co. | | 122 |
| Philip, C. M | | 20 |
| Wallace & Co., W. H. | | 16 |
| Wilson, J. G. | | 7 |
| Totals | 191 | 2,768 |
| Corres. date 1887 | 778 | 7,534 |
| **Steel & Iron Rods.** | **Week. Tons.** | **Year. Tons.** |
| Abbott & Co., Jere. | 358 | 6,096 |
| American Screw Co | | 748 |
| Bacon & Co. | | 109 |
| Baldwin Bros. & Co. | | 53 |
| Carey & Moen | 45 | 525 |
| Cohn, M. | | 60 |
| Dana & Co. | 100 | 1,818 |
| Downing & Co., R. F. | | 192 |
| Galpin, S. A. | | 2,110 |
| Heyn, A | | 1,689 |
| Hugill, Chas. | | 33 |
| Jacobus, E. Y. | | 12 |
| Lazard Freres | | 647 |
| Leng, J. S. | | 17 |
| Lundberg, Gustaf | | 120 |
| Milne & Co., A | | 1,408 |
| Montgomery & Co. | | 65 |
| Muller, Schall & Co. | | 150 |
| Naylor & Co. | 546 | 13,557 |
| Newton, & Shipman | | 2 |
| N. Y. Barb Wire Co. | | 20 |
| Page, Newell & Co. | | 152 |
| Perry & Ryer | | 100 |
| Pierson & Co. | | 10 |
| Pilditch, F. S. | | 11 |
| Prosser, Thos | | 132 |
| Roebling's Sons, J. A. | | 1,560 |
| Sanderson & Son | | 67 |
| Sheldon & Co., G. W. | | 11 |
| Walschid C. A. | | 15 |
| Washburn Mfg. Co. | | 35 |
| Whittemore & Co. | 5 | 1,705 |
| Wolff & Co., R. H. | 98 | 1,467 |
| Total | 1,152 | 34,696 |
| Corres. date 1887 | 1,627 | 73,654 |

| Old Rails. | Week. Tons. | Year. Tons. |
|---|---|---|
| Baldwin Bros. | | 100 |
| Bowening & Archibald. | | 100 |
| Brown Bros. & Co. | | 668 |
| Crossman & Bro., W. H. | | 1,005 |
| D., L. & W. R. R. | | 409 |
| Frankfort, M. | | 100 |
| Geisenheimer & Co. | | 100 |
| Henderson Bros | | 537 |
| Neumark & Gross | | 1,012 |
| Stetson & Co., Geo. W. | | 230 |
| Waltam & Co. | | 300 |
| Winter & Smillie | | 80 |
| Total | | 5,541 |
| Corres. date 1887 | 1,227 | 106,099 |
| **Sheet Iron.** | **Tons.** | **Tons.** |
| Coddington & Co. | 26 | 1,237 |
| Newton & S. | | 4 |
| Wagner, W. F. | | 40 |
| Whitney & Co. | | 5 |
| Total | 26 | 1,286 |
| Corres. date 1887 | 2 | 1,148 |
| **Scrap-Iron.** | **Tons.** | **Tons.** |
| Bowring & Archibald. | 100 | 100 |
| Brown Bros. & Co. | | 20 |
| Burgess & Co. | | 172 |
| Crossman, W. H. & Co. | | 47 |
| Geisenheimer & Co. | | 565 |
| Gerhardt, P. T. | | 8 |
| Muller, Schall & Co. | | 15 |
| Neumark & Gross | | 321 |
| Purdon & W | | 75 |
| Trowbridge & Co., D. | | 75 |
| Ward & Co., J. E. | | 150 |
| Total | 100 | 1,648 |
| Corres. date 1887 | | 13,551 |
| **Charcoal Iron.** | **Tons.** | **Tons.** |
| Abbott & Co., Jere. | | 3 |
| Downing & Co. | | 25 |
| Lunberg, G. | | 16 |
| Mersick & Co. | | 70 |
| Milne & Co. | | 15 |
| Muller, Schall & Co. | | 2 |
| Naylor & Co. | 22 | 47 |
| Page, Newell & Co. | | 307 |
| Sanderson & Son | | 1 |
| Total | 22 | 486 |
| **Spiegeleisen.** | **Tons.** | **Tons.** |
| Abbott & Co., Jere. | | 205 |
| Arkell, Jas. | | 78 |
| Crocker Bros. | | 1,602 |
| Dana & Co. | | 451 |
| Geisenheimer & Co. | | 203 |
| Jansen, J. A. | | 10,293 |
| Naylor & Co. | 20 | 7,567 |
| Perkins, C. L. | | 2,443 |
| Pierson & Co. | | 1,035 |
| Total | 20 | 23,877 |
| Corres. date 1887 | 5,314 | 62,169 |
| **Iron Ore.** | **Tons.** | **Tons.** |
| Cormack & Co. | | 1,022 |
| De Flores, R. | | 6,768 |
| Earnshaw, A. | 454 | 5,124 |
| Ennis & Co. | | 1,721 |
| Johnston & Co | | 300 |
| Naylor & Co. | | 3,706 |
| Wright, Chas. L. & Co. | | 1,630 |
| Total | 454 | 20,217 |
| Corres. date 1887 | 920 | 27,058 |

## EXPORTS.

| Copper. | Week. Pounds. | Year. Pounds. |
|---|---|---|
| Abbott & Co. | | 7,028,519 |
| Amer. Metal Co. | 362,627 | 4,968,727 |
| Becker, & Co., H. | | 1,250 |
| Bridgpt. Copper Co | | 112,000 |
| Copper Queen | | 224,034 |
| Herold, Emil | | 250,000 |
| Ismay, J. Bruce | | 115,000 |
| Jones, R. W. | | 189,984 |
| Ledoux & Co | | 110,276 |
| Lewisohn Bros. | | 4,860,254 |
| Lomal, F. A. | | 2,691,293 |
| Mendel, S. | | 560,000 |
| Muller, Schall | | 1,105,000 |
| Neumark & Gross | | 120,143 |
| Orford Co. | | 349,881 |
| Parsons & Co. | | 206,250 |
| Phelps, Dodge | | 230,664 |
| Pope's Sons | | 1,282,530 |
| Todd & Co. | | 112,026 |
| Total | 362,627 | 24,527,831 |
| Corres. date 1887 | | 71,537,119 |
| **Copper Matte.** | | |
| Abbott & Co | | 601,145 |
| Amer. Metal Co., | | 2,690,858 |
| Ledoux & Co. | | 469,720 |
| Lewisohn Bros. | | 1,126,822 |
| Nichols & Co. | | 516,783 |
| Wilm's, Terhune | 520,000 | 33,678,261 |
| Total | 520,000 | 39,083,589 |
| Corres. date 1887. | | 19,332,957 |
| **Old Copper.** | | |
| Burgass & Co | | 27,821 |
| Total | | 27,821 |

## CURRENT PRICES.

### CHEMICALS.

**Acid**—Acetic.....2¾@2½
Muriatic, 18°, per 100 lbs.....1.20
Muriatic, 20°, per 100 lbs.....1.35@1.50
Nitric, 36°, per 100 lbs.....4.50@5.00
Nitric, 42°, per 100 lbs.....6.00
Oxalic.....6½@7
Sulphuric, 60°, per 100 lbs.....90
Sulphuric, 66°, per 100 lbs.....1.10
**Alkali**—36 p. c.....1.10@1.15
48 p. c.....1.22½@1.25
Refined, 58°.....1.15
**Alum**—Lump, per lb.....1¾
Ground, per lb.....2½
Lump. per ton, Liverpool.....£5
Sulphate of Alumina, ₽ ton....£3 15
**Aqua Ammonia**—18°, ₽ lb.....4
20°, ₽ lb.....5
22°, ₽ lb.....6¾
26°, ₽ lb.....9¾
**Ammonia**—Sul., per 100 lbs. 3.00@3.50
Carb., per lb.....7¾
Muriate, per lb.....7
**Arsenic**—White, powdered, ₽ lb.3¼@3½
White, glass.....
Red, per lb.....6½
White, at Plymouth, per ton....£11 10
**Asbestos**—Am., p. ton.....$20@$100
Italian, p. ton, c. i. f. L'pool....£18 0 0
**Asphaltum**—P. ton.....13.00
Prime Cuban, ₽ lb.....5@6c.
Hard, ₽ ton.....$28.00
Trinidad, refined, ₽ ton.....$30.00
**Barytes**—Sulph., Am. prime white16.00
Sulph., foreign, floated, p. ton....19.00
Sulph., off color, p. ton.....12.50
Carb., lump, f.o.b. L'pool, ton....£6 0 0
No. 1, casks, Runcorn " "£4 10 10
No 2, bags, Runcorn " " 3 15 0
**Bleach**—Over 35 p.c., ₽ lb.1.82½@1.95
**Borax**—Per lb.....7¾
Refined at Liverpool, per ton.....£31
**Brimstone**—*See Sulphur.*
**Bromine**—Per lb.....36
**Cement**—Rosendale, per bbl.....1.00
Portland, American, per bbl.....2.00
Portland, foreign, per bbl.....2 25
**Chalk**—Per ton.....3.00
Precipitated, per lb.....4
**China Clay**—English, per ton....18.50
Southern, per ton.....13.50
**Chrome Yellow**—Per lb.....8
**Cobalt**—Oxide, per lb.....270
**Copper**—Sulph. English Wks. ton £23
Precip., Eng. Wks, unit.. .fluctuating
**Copperas**—Common, per 100 lbs.$ 65
Best, per 100 lbs.....1.00
Liverpool, per ton, in casks, £1 16 1.20
**Cream of Tartar**—Am. 99%....32@32¾
Powdered, 99 p. c.....33½
**Emery**—Grain, per lb.....4
Flour, per lb.....2½
**Feldspar**—Ground, per ton.....14.00
**Fuller's Earth**—Lump, per bbl. 95
Powdered, per lb.....2
**Gypsum**—Calcined, per bbl.....1.25
**Iodine**—Resublimed.....3.60
**Kainit**—Per ton.....11.50
**Kaolin**—*See China Clay.*
**Lead**—Red, per lb.....6
White, American, in oil, per lb....6½
White, English, per lb.....7½
Acetate, or sugar of.....13@13½
**Lime Acetate**—Amer. Brown.1.50@1.55
" Gray.2.37½@2.40
**Litharge**—Powdered, per lb.....6@6¼
English flake, per lb.....9
**Magnesite**—Greek, per ton.....10.00
**Manganese**—lump, c.i.f. L'pool.£2 15
Per unit, up or down.....1s. 6d.
Ground.....£5 10
**Mercuric-Chloride**—(*Corrosive Sublimate*) per lb.....55
**Mineral Wool**—Per lb.....2
**Mica**—In sheets according to size, 1st quality, ₽ lb.....25@$6 00
**Phosphate Rock**—S. Carolina, per ton f. o. b. Charleston.....5.00
Ground, ex vessel New York .9.50@ 9.60
Canadian Apatite, lump, f. o. b. at shipping port, per unit.....24
**Phosphorus**—Per lb.....65
**Plumbago**—Ceylon, per lb.....4@5
American, per lb.....5@7
London, per cwt.....£0 15 0
**Potassium**—Cyanide, per lb....39@41
Bromide, per lb.....37
Chlorate, per lb.....15¼@15½
Carb. per lb.....5
Caustic, per lb.....7½
Iodide.....2.70@2.75
Muriate, per 100 lbs.....1.77½@1.80
Nitrate, refined, per lb.....6
Bichromate, per lb.....10½
Sulphate, per 100 lbs.....1.10
Yellow Prussiate, per lb.....19
Red Prussiate, per lb.....42
**Pumice Stone**—Select lumps, lb. 3@5
Original cks., per lb.....1¾
Powdered, pure, per lb.....2
**Pyrites**—Non-cupreous, p. unit, S. 14
**Quartz**—Ground, per ton.....18.00
**Rotten Stone**—Powdered, per lb. 8½
Lump, per lb.....5
Eng., powdered, per ton.....£4
Lump, per ton.....£5
**Salt**—Liverpool, ground per bbl. 70
Turk's Island, per bbl.....25
**Salt Cake**—Per 100 lbs.....50
**Saltpeter**—Crude, per lb.....4½
Refined, per lb.....6
**Soda Ash**—Carb.,48% 100 lb...1.30 @1.35
Caustic, 48 %.....1.30 @1.35
High test.....1.12½@1.15
Soda Caustic, 60%.....2.40@2.50
" " 70%.....2.25
" " 74-5%.....2.20
Sal, English, per 100 lbs.....1.15
Sal, American, per 100 lbs.....1.15
Nitrate, per 100 lbs.....2.05
**Strontium**—Nitrate per lb.....10½
**Sulphur**—Roll, per lb.....1¾
Flour, per lb.....2
Crude Brimstone, 2s., ₽ ton...22.00
Crude Brimstone, thirds, per ton 21.25
**Talc**—Ground French, per lb.....1¼
Domestic, per lb.....6
Domestic, per ton.....15.00
c. i. f. Liverpool, per ton.....£4 5 0
**Tannin**—Pure, per lb.....
**Vermillion**—American, per lb...50
English, per lb.....65
**Vitriol**—(Blue), Ordinary, per lb..5½
Extra, per lb.....6
**Zinc Oxide**—Am., Dry, per lb....4½
Antwerp, Red Seal, per lb.....6@6½
Paris, Red Seal, per lb.....6½@7
* Spot.

### BUILDING MATERIAL.

**Bricks**—Pale, per 1,000.....5.00
Jerseys, per 1,000.....7.50
Haverstraw, per 1,000.....8.50
Front bricks, per 1,000, from.....10.00
**Building Stone**—Amherst freestone, per cu. ft., from.....75
Brownstone, per cu. ft., from.....1.00
Granite, rough, per cu. ft., from..45
**Slate**—Purple and green roofing, per 100 ft.....6.00
Red roofing, per 100 sq. ft.....15.00
Black, roofing, per 100 sq. ft. ...5.00

### THE RARER METALS.

**Aluminum**—(Metallic), per lb...$5.00
**Arsenic**—Metallic, per lb.....32
**Barium**—(Metallic), per lb.....975.00
**Bismuth**—(Metallic), per lb.....2.40
**Cadmium**—(Metallic), per lb.....150.00
**Calcium**—(Metallic), per oz.....150.00
**Cœsium**—(Metallic).....
**Cerium**—(Metallic), per oz.....160.00
**Chromium**—(Metallic), per lb...200 00
**Cobalt**—(Metallic), per lb.....6.00
**Didymium**—(Metallic), per oz...160.00
**Erbium**—(Metallic), per oz.....140.00
**Gallium**—(Metallic), per oz....3250.00
**Glucinum**—(Metallic).....4.50
**Indium**—(Metallic), per oz.....158.00
**Iridium**—(Metallic), per lb.....700.00
**Lanthanum**—(Metallic), per oz.175.00
**Lithium**—(Metallic), per oz.....160.00
**Magnesium**—Per lb.....4.00
**Manganese**—Metallic, per lb...1.10
**Molybdenum**—(Metallic), per oz. 6.00
**Nickel**—(Metallic), per lb.....65
**Niobium**—(Metallic), per oz.....128.00
**Osmium**—(Metallic), per lb....640.00
**Palladium**—(Metallic), per lb...512.00
**Platinum**—(Metallic), per lb. ..128.00
**Potassium**—Metallic, per oz....2.00
**Rhodium**—(Metallic), per lb....512.00
**Ruthenium**—(Metallic), per oz.112.00
**Rubidium**—(Metallic), per oz....200.00
**Selenium**—(Metallic), per oz.....3.00
**Sodium**—(Metallic) per lb.....4.50
**Strontium**—(Metallic), per oz..128.00
**Tantallum**—(Metallic) per oz....144.00
**Telurium**—(Metallic) per oz....9.00
**Thallium**—(Metallic) per oz.....3.00
**Titanium**—(Metallic) per oz....32.00
**Thorium**—(Metallic) per oz.....272.00
**Tungsten**—(Metallic) per oz.....1.25
**Vanadium**—(Metallic), per oz..320.00
**Yttrium**—(Metallic), per oz ...144.00
**Zirconium**—(Metallic), per oz..240.00

### METALS.

**Aluminum**—
Bronze (10 %), ₽ lb.....46c.
**Copper**—
Lake Ingot, Spot, ₽ lb....16·80@16.90c.
Electrolytic, ₽ lb.....16·50c.
Casting Brands, ₽ lb. ...15·25@15½c.
Chili Bars, London, ₽ ton.....£81 0s.
Sheet Copper (according to size), ₽ lb.....25 @38c
**Lead**—
Domestic, Common, Spot..3·90@4c.
Foreign.....4 60@4 70c.
Sheet, ₽ lb, net.....6.75@6·80c. net
Pipe, ₽ lb.....6¼c. "
Tin lined Pipe, ₽ lb.....12c. "
Shot, ₽ lb.....6½@ 7¼c
**Tin**—
Tin Plates.....14s. 6d.
Tin Spot in London.....£87 15s.
Pig tin, spot in N. Y., ₽ lb..19·75c.
**Zinc**—
Domestic spelter, ₽ lb....4·55@4·65c.
Foreign spelter, ₽ lb....5·40@5·50c.
Silesian, ton.....£17
Sheet, American, ₽ lb.....6@6¼c.
**Antimony**—Hallet's, per lb..9¾@9·70c.
Cookson's, per lb.....12
Star Antimony.....£38
**Quicksilver**—Per lb.....61@63c.
London, ₽ flask.....£7@£7¼

### IRON AND STEEL.
#### New York Prices.

**American Pig-Iron.**—At tidewater.
No. 1 X.....$17.50@$18.50
No. 2 X.....$17.00@ 17.50
Forge.....$16.00@.....
**Scotch Pig**—Coltness...$19.75@$20.25
Clyde.....18.50@ 19.00
Dalmellington.....18 50@ 19.00
Summerlee.....19.50@ 20.00
Shotts.....19.50@ 20.00
*By Cable to-day to the Metal Exchange :*
Scotch Warrants.....39s. 7d.
Coltness, at Glasgow.....48s. 0d.
Langloan, at Glasgow.....44s. 6d.
Summerlee, at Glasgow.....47s. 6d.
Gartsherrie, at Glasgow.....44s. 6d.
Glengarnock, at Ardrossan.....43s. 0d.
Dalmellington, at Ardrossan.....40s. 0d
Eglinton, at Ardrossan.....39s. 0d.
**Bessemer Pig**—
Foreign, nominally.....$19.00
Domestic.....17.50@18
**Spiegeleisen**—
German, 20 per cent.....$26
English, 20 " " .....$27.00@ 27.50
" 30 " " .....31.00@ 31.50
Ferro Manganese.....$49.00@$50.00
**Steel Blooms**, nominally.....
**Steel Billets**, " 28.50@ 29.00
**Steel Nail Slabs**, " 29.50@.....
**Steel Wire Rods**, " 46.00@ 40.50
**Steel Rails**—
Heavy sections, at mill.....@$30.00
Light " " .....30.50@ 34.50
**Structural Iron and Steel**—
Bridge Plate, at mill.....1·9 @2c.
Angles, at mill.....2·00@2·05c.
Tees, at mill.....2·40@2·50c.
Steel Angles, at mill.....2·1 @2·2c.
Beams and Channels, on wharf, 3·3c. base
**Steel Plates**—
Tank and Ship, on wharf.....2 25@2·4
Boiler Shell, on wharf.....2·4 @2·6
" Flange, " .....2·60 @2·75
" Fire-Box, on wharf.....3 @3·50
**Iron Plates**—
Common tank, on wharf....1·9@2·0c.
Refined tank, on wharf.....2·1@2·3c.
Boiler shell, " .....2·1@2 3c.
Boiler flange, " .....3·50@3·75
Extra flange, " .....3¼@3½
**Bar Iron**—
Refined.....1·7@1·9c. "
Common.....1·5@1·6c. "
**Merchant Steel**—
American tool.....8½@10c.
Special grades.....13 @20c.
Crucible machinery.....5 @6c
" spring.....4½c.
Bessemer machinery.....2·2@2·6c
" spring.....2·7@2·9c.
**Cast-Iron Pipe**—
According to size.....$25 00@$32.00
**Wrought-Iron Pipe**—nominally—
Butt-Welded, Plain and Tarred, 57½% disc; Galv., 50% disc.
Lap-Welded, Plain and Tarred, 67½% disc; Galv., 55% disc.
**Boiler Tubes**—Per cent disc.....62½%
**Rail Fastenings**—
Spikes.....2 @2·1c. delv'd
Angle Fish-bars.....1·8 @1·9c.
Bolts and Sq. Nuts.....2·7 @2·8c
" " Hex. " .....3 @
**Wrought Scrap**—
Foreign, *ex store*.....$19.00@
No. 1 Yard *to vessel*.....19.00@
**Cast Scrap**.....15.50@ 16.50
**Old Car Wheels**.....@ 19.50
**Old Rails**—Tees.....20.00@
—Doubles.....21.00@
**Nails**—In car-load lots.....1·90@1·95c.
—From store.....2·00@2·05c.

### Louisville Prices.

**Hot Blast Irons**—
So. Coke, No. 1.....$16.00@$16.50
" " No. 2.....15.00@ 15 50
" " No. 2½.....14.50@ 15.00
Mahoning Valley (Lake Ore Mixture).....18.00@ 18.50
So. Charcoal, No. 1.....17.00@ 17.50
" " No. 2.....16.00@ 16.50
Missouri Charcoal No. 1....19.00@ 19.50
" " No. 2....18.50@ 19.00
**Forge Irons**—
Neutral Coke.....$13.25@$14.00
Cold Short.....13.00@ 13.50
Mottled.....12.25@ 12.50
**Car Wheel and Malleable Irons**—
Southern (standard brands).$22.00@$24.00
" (other brands).....18 00@ 18 50
Lake Superior.....21.50@ 22.50

### Pittsburg Prices.

**Coke or Bituminous Pig**—
Foundry No. 1.....$16.50@17.00
Foundry No. 2.....16.00@.....
Gray Forge No. 3.....14.25@14.50
" " No. 4.....14.25@.....
White.....13.50@14.00
Mottled.....13.50@14.00
Silvery.....16.50@18.00
Bessemer.....17.00@17.25
**Charcoal Pig**—
Foundry No. 1.....23.50@24.50
Foundry No. 2.....22.00@24.00
Cold-Blast.....25.00@27.00
Warm-Blast.....24.00@25.00
20 p. c. Spiegel.....27.50@.....
Muck-Bar.....26.25@26.50
Steel Blooms.....28.25@28.50
Steel Slabs.....28.25@28.50
Steel Crop Ends.....18.00@.....
Steel Bloom Ends.....@17.50
Steel Billets.....28.25@28.50 at works
Old Iron Rails.....21.00@21.50
Old Steel Rails.....19.00@.....
No. 1 W. Scrap.....18.00@19.00
No. 2 W. Scrap.....17.00@17.50
Steel Rails.....*31.50@32.00
" light sections.....*32.00@33.00
Bar Iron., nominal.....1.75@ 1.85
Nails.....$1.90 usual discount
Steel Nails.....$1.90
Two per cent off for cash.
* At works.

### Philadelphia Prices.

Foundry No. 1.....$18.00@19.00
Foundry No. 2.....17.00@18.00
Gray Forge.....15.50@16.50
Bessemer Pig.....19.50@20.00
Steel Rail Blooms.....29.50@nom.
Foreign Bessemer.....19.50@20.00
Spiegeleisen.....26.50@27.00
Scrap, Selected.....22.00@22.50
No. 1.....21.00@20.00
Cargo Scrap.....21.00@20.50
Muck-Bars.....27.50@.....
Merchant Iron.....1.75@ 1.95
Plate Iron.....2.00@ 2.20
Tank Iron.....2.00@ 2.20
Skelp Iron.....1.80@ 1.90
Angles.....2.00@ 2.10
Beams and Channels.....3.30.@.....
Nails.....1.90@ 2.00
Steel Rails.....30.00@31.00
Old Rails.....21.00@22.00
Best refined.....2@2·1c. base.

## STOCK MARKET QUOTATIONS.

### Baltimore, Md.

| Company. | Bid. | Asked. |
|---|---|---|
| Atlantic Coal.... | 1.30 | 1.50 |
| Balt. & N. C..... | .37@.39 | .40@.45 |
| Big Vein Coal.. | ... | ... |
| Conrad Hill . .. | .07 | .14@.15 |
| Diamond Tunnel | .... | ... |
| George's Crk. C. | 100@100¼ | 103@103¼ |
| Lake Chrome.. | .05 | ... |
| N. State, Balto.. | .... | .30 |
| Ore Knob ..... | | |
| Silver Valley.... | .85 | .95@1.10 |

Highest and lowest prices bid and asked during the week ending July 26th.

### Birmingham, Ala.

| Company. | Bid. | Asked. |
|---|---|---|
| Ala. Conn. C.. | .... | 25 |
| Bir. Min. & Mfg. | ... | 190 @192½ |
| Bir. Fur. & Mg. | .... | 22½ |
| Broken Arrow C. & M.. ... | 10 | 15 |
| Decat. L. Imp. & Fur. .... | 14 @14½ | 15 @ 15½ |
| DecaturMin. L. | .... | 26 |
| Enterprise Mfg. Co..... | 35 | 50 |
| Jagger-Townley C & C. Co. | .... | 11 |
| Mag-Ellen C. & Mg ..... | 50 | ... |
| No Bus. Crk., C. & Mg.... | 5 | 12½ |
| Pioneer M. & Mfg ..... | .... | .... |
| Sloss I. & S. .. | 12 @1²¾ | 13½@ 13¾ |
| * Sloss I. & S.. | 77 | 78½ |
| Sheffield C. & I. | 64½@66½ | 69 @ 69¾ |
| Tenn. C. & I. Co. | 27 | .... |
| *Williamson Iron Co.... | .... | .... |
| WoodstockS&I | 49 @49½ | 54 @ 57½ |

* Bonds.

Highest and lowest prices bid and asked during the week ending July 24th.

### Pittsburg, Pa.

| Company. | H. | L. | Closing. |
|---|---|---|---|
| Allegegheny Gas.. | .... | ..... | .... |
| Bridgewater Gas.. | .... | ..... | .... |
| Charlotte Mg. Co.. | .... | ..... | .... |
| Chartiers Val. Gas. | 54.00 | 53.00 | 54.00 |
| Columbia Oil Co.. | 4.00 | 3.75 | 4.00 |
| Consignee Mg. Co. | ..... | ..... | ..... |
| Forest Oil Co..... | ..... | ..... | .... |
| Iron City Mining.. | ..... | ..... | ..... |
| Kittanning Gas.... | ..... | ..... | ..... |
| La Noria Mining .. | 2.00 | 1.50 | 2.00 |
| Lustre Mining.... | .... | ..... | .... |
| M'f'turers' Gas.... | 25.25 | 24.50 | 25.00 |
| Nat. G. Co. of W. Va. | 60.00 | 60.00 | 60.00 |
| N. Y. & C. Gas Coal | .... | ..... | ..... |
| N. Y. & Westmoreland G, C. & C.. | ..... | ..... | ..... |
| Ohio Valley Gas .. | .... | ..... | .... |
| Pennsylvania Gas. | 22.00 | ..... | 22.00 |
| People's Nat. Gas. | 40 00 | 40.00 | 40.00 |
| Philadelphia Gas.. | 43.50 | 41.88 | 43.50 |
| Pine Run Gas..... | 50.00 | 50.00 | 50.00 |
| Pittsburg Gas..... | 60.00 | 60.00 | 60.00 |
| Royal Gas..... | .... | ..... | .... |
| Silverton Mining.. | 2.50 | 2.00 | 2.00 |
| South Side Gas... | .... | ..... | ..... |
| Tuna Oil Co..... | .... | ..... | ..... |
| Washington Oil.. | 50.00 | 46.00 | 46.50 |
| W't'h'se Air-Brake | 123.88 | 119.00 | 119.00 |
| West'house Brake | 65.00 | 65.00 | 65.00 |
| Westmoreland & Cambria Gas.. | ..... | ..... | ..... |
| Wheeling Nat. Gas. | 28.00 | 26.75 | 27 25 |
| Yankee Girl Min.. | .... | ..... | ..... |

Highest and lowest prices bid and asked during the week ending July 25th.

### Foreign Quotations.

| Company. | *London.* Highest. | July 13. Lowest. |
|---|---|---|
| Alturas Gold, Idaho... | 14s. | 12s. |
| Arizona Copper, Ariz. | 15s. 6d. | 15s. |
| Birdseye Creek, Cal.... | 6s. | 5s. |
| Carlisle, N. Mex ..... | 16s. | 14s. |
| Centennial. Cal. ..... | 7s. 6d. | 5s. |
| Colorado United, Colo.. | 5s. | 3s. |
| Columbian, S. A..... | 42s. 6d. | 32s. 6d. |
| Denver Gold, Colo..... | 1s. | 6d. |
| Dickens Custer, Idaho. | 7s. | 6s. |
| Eberhardt, Nev ..... | 2s. | 1s. |
| El Callao, Venezuela.... | 15s. | 12s. 6d. |
| Empire, Mont ..... | £13-16 | £11-16 |
| Flagstaff, Utah..... | 3s. 6d. | 2s. 6d. |
| Garfield, Nev..... | 16s. | 14s. |
| Gold Hill, N. C..... | 2s. | 1s. |
| Idaho..... | 14s. 6d. | 13s. 6d. |
| Ilex, Cal..... | 17s. | 15s. |
| Josephine, Cal ..... | £⅝ | £⅜ |
| Kohinoor, Colo..... | 8s. 6d. | 1s. 6d. |
| Lady Franklin N. Mex . | 6s. | 4s. |
| Mason & Barry, Portugal | £8¼ | £8½ |
| Montana Lt., Mont..... | £1⅞ | £1 7-16 |
| New California, Colo... | 4s. | 3s. 6d. |
| New Emma, S., Utah... | 5s. | 4s. |
| New Hoover Hill, N. C. | 2s. | 1s. |
| New La Plata, Colo... | 1s. 9d. | 1s. 3d. |
| Pittsburg Cons., Nev... | 27s. 6d. | 22s. 6d. |
| Plumas Eureka, Cal.... | £1 | £15-16 |
| Quebrada, Venezuela,.. | £4¼ | £4¼ |
| Richmond Con., Nev... | £4⅞ | £4⅜ |
| Ruby&Dunderberg, Nev | 2s. | 1s. |
| Russell Gold, N. C..... | 3s. 6d. | 2s. 6d. |
| Sierra Buttes, Cal..... | £⅝ | £½. |
| Stanly, N. C..... | 7s. 6d. | 7s. 6d. |
| Tolima, Colombia, S.A. | £2½ | £1½ |
| Union Gold, Colo..... | 2s. | 1s. |
| U. S. Placer, Colo..... | £¾ | £⅝ |
| Viola Lt., Idaho ..... | 18s. 9d | 16s. 3d. |
| | *Paris.** | July 12. |
| El Callao..... | 68.00 | 68.00 |
| Golden River..... .. | 405 | 405 |
| Lexington. ..... | 80 | 80 |
| " parts..... . | 4 | 4 |
| Rio Tinto..... | 455 | 455 |
| " obligations... | 501.25 | 501.25 |
| " " 2d. | 498.75 | 498.75 |
| Tharsis ..... | 125 | 125 |

* Francs.

## DIVIDEND-PAYING MINES.

| | Name and Location of Company. | | Capital Stock. | Shares. No. | Par | Assessments. Total levied. | Date and amount of last. | | | Dividends. Total paid. | Date and amount of last. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Adams, s. l. | Colo. | $1,500,000 | 150,000 | $10 | | | | | $555,000 | Jan. | 1887 | |
| 2 | Alice, s. c. | Mont | 10,000,000 | 400,000 | 25 | * | | | | 750,000 | Sept | 1886 | 06⅔ |
| 3 | Alturas, g | Idah. | 1,500,000 | 300,000 | 5 | | | | | 95,000 | Sept | 1886 | 50 |
| 4 | Amy & Silversmith, s. | Mon. | | 341,419 | | | | | | 247,530 | Aug. | 1887 | .12½ |
| 5 | Atlantic, c. | Mich | 1,000,000 | 40,000 | 25 | $280,000 | Apl. | 1875 | $1.00 | 480,000 | Aug. | 1888 | 1.50 |
| 6 | Argenta, s | Nev.. | 10,000,000 | 100,000 | 100 | 325,000 | July | 1885 | .10 | 40,000 | Feb. | 1880 | .20 |
| 7 | Aurora, i. | Mich. | 2,000,000 | 100,000 | 20 | * | | | | 155,000 | Oct. | 1887 | 1.87½ |
| 8 | Bassick, G. s. | Colo. | 10,000,000 | 100,000 | 100 | * | | | | 400,000 | Mar. | 1884 | 1.00 |
| 9 | Belle Isle, s. | Nev.. | 10,000,000 | 100,000 | 100 | 145,000 | Feb | 1887 | .20 | 300,000 | Dec. | 1879 | .25 |
| 10 | Belcher, G. s. | Nev.. | 10,400,000 | 104,000 | 100 | 2,718,000 | July | 1888 | .50 | 15,397,200 | Apl | 1876 | 1 00 |
| 11 | Bellevue (Idaho, s. l. | Idah. | 1,500,000 | 150,000 | 10 | 57,500 | Nov. | 1887 | .25 | 187,500 | Jan | 1887 | .10 |
| 12 | Big B'nd Hyraulic, g | Dak.. | | 200,000 | 5 | * | | | | 258,000 | Aug. | 1887 | .03 |
| 13 | Black Bear, G. | Cal.. | 3,000,000 | 30,000 | 100 | 92,500 | Dec. | 1884 | .25 | 895,000 | May | 1883 | .20 |
| 14 | Bodie Con., G. s. | Cal.. | 10,000,000 | 100,000 | 100 | 450,000 | Feb. | 1888 | .50 | 1,295,000 | Apl. | 1885 | .50 |
| 15 | Bonanza Developm't | C & M | 3,000,000 | 300,000 | 10 | | | | | 135,000 | Oct. | 1882 | .15 |
| 16 | Bonanza K'g, Cons. s. | Cal.. | 1,000,000 | 100,000 | 10 | * | | | | 185,000 | Feb. | 1885 | .10 |
| 17 | Boston & Mont., G. | Mont | 2,500,000 | 250,000 | 10 | * | | | | 620,000 | Jun | 1886 | .15 |
| 18 | Boston & Mont., C. s. | Mont | 2,500,000 | 125,000 | 25 | * | | | | 200,000 | July | 1888 | 2.00 |
| 19 | Breece, s. | Colo. | ,000,000 | 200,000 | 25 | * | | | | 2,000 | Feb. | 1880 | .01 |
| 20 | Brooklyn Lead, L. s. | Utah | 500,000 | 750,000 | 10 | | | | | 127,000 | July | 1887 | .05 |
| 21 | Bulwer, G. | Cal. | 10,000,000 | 100,000 | 10 | 80,000 | May | 1888 | .20 | 175,006 | Jan. | 1884 | .10 |
| 22 | Caledonia, G. | Dak. | 10,000,000 | 100,000 | 100 | 505,000 | May | 1885 | .15 | 40,000 | Feb. | 1886 | .10 |
| 23 | Calumet & Hecla, C. | Mich | 2,500,000 | 100,000 | 25 | 1,200,000 | .. | | | 30,350,000 | July | 1888 | 5.00 |
| 24 | Carbonate Hill, s. L. | Colo. | 2,000,000 | 200,000 | 10 | * | | | | 80,000 | Apl. | 1884 | .05 |
| 25 | Caribou Con., s. | Colo. | 1,500,000 | 150,000 | 10 | * | | | | 50,000 | Mch | 1880 | .10 |
| 26 | Castle Creek, G. | Idah. | 100,000 | 100,000 | 1 | | | | | 51,000 | Oct. | 1883 | .03 |
| 27 | Catalpa, s. L | Colo. | 3,000,000 | 300,000 | 10 | * | | | | 270,000 | May. | 1884 | .10 |
| 28 | Central, c. | Mich | 500,000 | 20,000 | 25 | 100,000 | Sept | 1861 | .06 | 1,890,000 | Aug. | 1888 | 1.50 |
| 29 | Christy, s. | Utah | 10,000,000 | 100,000 | 100 | | | | | 10,000 | Jun. | 1885 | .10 |
| 30 | Chrysolite, s. L. | Colo. | 10,000,000 | 200,000 | 50 | * | | | | 1,650,000 | Dec. | 1884 | .25 |
| 31 | Colorado Central, s. L | Colo. | 2,750,000 | 275,000 | 10 | * | | | | 323,750 | Aug | 1888 | .05 |
| 32 | Confidence, s. L. | Nev.. | | 24,000 | | 287,440 | Apl. | 1-87 | .50 | 140,780 | July | 1888 | 2.00 |
| 33 | Cons. Cal. & Va., G. s. | Nev. | 21 600,000 | 216,000 | 100 | 105,000 | Jan. | 1885 | .20 | 2,008,800 | July | 1888 | .50 |
| 34 | Con. Gold Mining, G. | Ga... | 500,000 | 100,000 | 5 | " | " | " | " | 108,000 | Nov. | 1888 | .02 |
| 35 | Contention, s. | Ariz. | 12,500,000 | 250,000 | 50 | | | | | 2,587,000 | Dec. | 1884 | .25 |
| 36 | Crescent, s. L. G. | Utah | 15,000,000 | 600,000 | 25 | | | | | 210,000 | Aug. | 1886 | .05 |
| 37 | Crown Point, G. s. | Nev.. | 10,000,000 | 100,000 | 100 | 2,775,000 | Apl. | 1888 | .50 | 11,588,000 | Jan. | 1875 | 2.00 |
| 38 | Daly, s. L. | Utah | 3,000,000 | 150,000 | 20 | | | | | 675,000 | July | 1888 | .25 |
| 39 | Deadwood-Terra, G. | Dak.. | 5,000,000 | 200,000 | 25 | * | | | | 1,400,000 | Nov. | 1887 | .10 |
| 40 | Derbec B. Grav., G. s. | Cal.. | 10,000,000 | 100,000 | 100 | 90, 0 | Dec. | 1881 | .10 | 180,000 | May | 1887 | .10 |
| 41 | Dunkin, s. L. | Colo. | 5,000,000 | 200 000 | 25 | * | | | | 335,000 | July | 1888 | .05 |
| 42 | Eclipse | Colo. | 100,000 | 100,000 | 1 | | | | | 20,000 | Nov. | 1887 | .10 |
| 43 | Elkhorn, G. s. | Mont | 1,000,000 | 100,000 | 10 | 50,0 0 | July | 1883 | .50 | 170,000 | July | 1887 | .05 |
| 44 | Empire Lt., G. | Mont | 500,000 | 100,000 | 5 | | | | | 70,500 | Oct. | 1887 | .37½ |
| 45 | Eureka Con., G. s. L. | Nev.. | 5,000,000 | 50,000 | 100 | 500,000 | July | 1886 | 1.00 | 4,918,500 | July | 1888 | .25 |
| 46 | Evening Star, s. L. | Colo. | 500,000 | 50,000 | 10 | * | | | | 1,400,000 | Nov. | 1883 | .50 |
| 47 | Excelsior, G. | Cal.. | 10,000,000 | 100,000 | 100 | 560,000 | Sept | 1885 | 1.00 | 875,000 | Oct. | 1880 | .25 |
| 48 | Father de Smet, G. | Dak.. | 10,000,000 | 100 000 | 100 | 200,000 | Nov | 1878 | 1.00 | 1,125,000 | Dec. | 1885 | .20 |
| 49 | Franklin, C. | Mich | 1,000,000 | 40,000 | 25 | 220,000 | Jun. | 1871 | | 720,000 | July | 1888 | 2.00 |
| 50 | Freeland, G. s. C. | Colo. | 5,000,000 | 200,000 | 25 | * | | | | 190,000 | July | 1886 | .10 |
| 51 | Fresno Enterprise, G | Cal.. | 5,000,000 | 100,000 | 50 | | Mch | 1883 | .10 | 110,000 | July | 1882 | .10 |
| 52 | Garfield Lt., G. s. | Nev.. | 500,000 | 100,000 | 5 | | | | | 85,000 | Apl. | 1888 | .12½ |
| 53 | Golconda, G. s. | Idah. | 1,000,000 | 100,000 | 10 | | | | | 120,000 | May | 1888 | .60 |
| 54 | Gould & Curry, G. s. | Nev.. | 10,800,000 | 108,000 | 100 | 5,301,000 | Jun. | 1888 | .50 | 3,826,800 | Oct. | 1870 | 10.00 |
| 55 | Grand Central, s. | Ariz. | 1,000,000 | 100,000 | 10 | | | | | 625,000 | Dec. | 1882 | .25 |
| 56 | Grand Prize, s. | Nev.. | 10,000,000 | 100,000 | 100 | 570,000 | Apl. | 1886 | .50 | 495,000 | Mar. | 1884 | .25 |
| 57 | Granite, s. | Colo. | 125,000 | 125,000 | 1 | | | | | 8,250 | May | 1883 | .01 |
| 58 | Granite Mountain, s. | Mont | 10,000,000 | 400,000 | 25 | | | | | 4,500,000 | July | 1888 | .25 |
| 59 | Green Mountain, G. | Cal.. | 1,250,000 | 125,000 | 10 | * | | | | 210,000 | Nov | 1881 | .07½ |
| 60 | Hale & Norcross, G. s | Nev.. | 11,200,000 | 112,000 | 100 | 5,086,000 | July | 1887 | .50 | 1,766,000 | July | 1888 | .50 |
| 61 | Hall-Anderson, G. | N. S.. | 150,000 | 150,000 | 1 | | | | | 7,000 | Jan. | 1882 | .05 |
| 62 | Hecla Con., s. G. L. C. | Mont | 1,500,000 | 30,000 | 50 | | | | | 1,182,500 | July | 1888 | .50 |
| 63 | Hel'a Mg & Red, G. s. L | Mont | 3,315,000 | 663,000 | 5 | * | | | | 197,970 | July | 1886 | .06 |
| 64 | Holmes, s. | Nev.. | 10,000,000 | 100,000 | 100 | 300,000 | Sept | 1885 | 10 | 75,000 | Apl. | 1886 | .25 |
| 65 | Holyoke, G. | Idah. | 200,000 | 200,000 | 1 | | | | | 27 000 | Feb. | 1883 | .10 |
| 66 | Homestake, G. | Dak. | 12,500,000 | 125,000 | 100 | 200,000 | July | 1878 | 1.00 | 4,388,750 | July | 1888 | .20 |
| 67 | Honorine, s. L. | Utah | 500,000 | 250,000 | 2 | 25,000 | Jun. | 1883 | | 125,000 | Sept | 1887 | .05 |
| 68 | Hope, s. | Mont | 1,000,000 | 100,000 | 10 | * | | | | 233,252 | Apl. | 1883 | .25 |
| 69 | Horn-Silver, s. L. | Utah | 10,000,000 | 400,000 | 25 | * | | | | 4,000,000 | Nov. | 1884 | .50 |
| 70 | Hubert, G. | Colo. | 500,000 | 50,000 | 10 | * | | | | 234,000 | July | 1888 | .08 |
| 71 | Idaho, G. | Cal.. | 310,000 | 3,100 | 100 | | | | | 4,916,500 | July | 1888 | 7.50 |
| 72 | Ideal, s. L. | | 1,500,000 | 50,000 | 10 | | | | | 15,000 | Oct. | 1886 | .05 |
| 73 | Illinois, s. | N. M. | 1 | 100,000 | 100,000 | * | | | | 85,000 | Apl. | 1888 | .25 |
| 74 | Independence, s. | Nev.. | 10,000,000 | 100,000 | 100 | 340,000 | Oct. | 1886 | .20 | 225,000 | Sept | 1879 | .25 |
| 75 | Indian Queen, s. | Nev.. | 250,000 | 125,000 | 2 | | | | | 368,750 | July | 1883 | .03 |
| 76 | Iron Hill, s. | Dak.. | 2,500,000 | 250,000 | 10 | 111,250 | Jun. | 1888 | .04 | 456,250 | Nov. | 1887 | .07½ |
| 77 | Iron-Silver, s. L. | Colo. | 10,000,000 | 500,000 | 20 | | | | | 2,900,000 | July | 1888 | .20 |
| 78 | Jackson, G. s. | Nev | 5,000,000 | 50,000 | 100 | 10,000 | Nov | 1880 | .20 | 45,000 | Oct. | 1886 | .10 |
| 79 | Jay Gould, | Mont | 2,000,000 | 100,000 | 10 | * | | | | 267,000 | Jun. | 1888 | .00 |
| 80 | Joculstita, s. | Mex. | 2,500,000 | 250,000 | 10 | | | | | 1,200,000 | Jan. | 1885 | .50 |
| 81 | Jumbo, G. | Colo. | 2,000,000 | 200,000 | 10 | | | | | 35,000 | Oct. | 1887 | .02½ |
| 82 | Kentuck | Nev.. | 3,000,000 | 30,000 | 100 | 342,000 | Nov | 1891 | .30 | 1,350,000 | Dec. | 1886 | .10 |
| 83 | La Plata, s. L. | Colo. | 2,000,000 | 200,000 | 10 | * | | | | 610,000 | Sept | 1882 | .30 |
| 84 | Leadville Cons., s. L. | Colo. | 4,000,000 | 400,000 | 10 | * | | | | 423,000 | Apl. | 1887 | .05 |
| 85 | Lexington, G. s. | Mont | 4,000,000 | 40,000 | 100 | * | | | | 565,000 | Jan. | 1885 | 2.00 |
| 86 | Little Chief, s. L. | Colo. | 10,000,000 | 200,000 | 50 | * | | | | 800,000 | July | 1888 | .10 |
| 87 | Little Pittsburg, s. L | Colo. | 20,000,000 | 200,000 | 100 | * | | | | 1,050,000 | July | 1888 | .50 |
| 88 | Manhattan, s. | Nev | 5,000,000 | 50,000 | 100 | 250,000 | Dec. | 1887 | 1.00 | 437,500 | Feb | 1886 | .25 |
| 89 | Marion Bullion, G | N.C. | 500,000 | | | | | | | 15,000 | Jan. | 1886 | |
| 90 | Martin White, s. | Nev.. | 10,000,000 | 100,000 | 100 | 1,150,000 | Mar. | 1886 | .25 | 140,000 | Dec. | 1886 | .25 |
| 91 | Mary Murphy, G. s. | Colo. | 350,000 | 3,500 | 100 | * | | | | 122,500 | Feb. | 1888 | 5.00 |
| 92 | Minnesota, C. | Mich | 1,000,000 | 40,000 | 25 | 420,000 | Apl. | 1886 | 1 00 | 1,836,000 | Mar. | 1876 | |
| 93 | Mono, G. | Cal. | 5,000,000 | 50,000 | 100 | 616,000 | Sept | 1887 | .50 | 12,500 | Mar. | 1886 | .25 |
| 94 | Montana, s. G. s. | Mont | 3,300,000 | 660,000 | 5 | * | | | | 2,010,000 | Apl. | 1888 | .25 |
| 95 | Morning Star, s. L. | Colo. | 1,000,000 | 100,000 | 10 | * | | | | 775,000 | Mar. | 1888 | .25 |
| 96 | Moulton, s. G. | Mont | 2,000,000 | 400,000 | 5 | * | | | | 380,000 | Dec. | 1887 | .07½ |
| 97 | Mount Pleasant, G. | Cal. | 150,000 | 150,000 | 1 | * | | | | 150,000 | Feb. | 1887 | .30 |
| 98 | Mt. Diablo, s. | Nev. | 5,000,000 | 50,000 | 100 | 137,500 | Jun. | 1880 | 2.00 | 110,000 | July | 1888 | .20 |
| 99 | Napa, Q | Cal.. | 700,000 | 100,000 | 7 | | | | | 200,000 | Jan. | 1883 | .10 |
| 100 | Navajo, G. | Nev.. | 10,000,000 | 100,000 | 100 | 485,000 | Apl. | 1888 | .30 | 325,000 | Feb. | 1885 | .25 |
| 101 | N. Hoover Hill, G. s. | N. C. | 300,000 | 120,000 | 2½ | * | | | | 30,000 | Dec. | 1885 | .06⅔ |
| 102 | Northern Belle, s. | Nev.. | 5,000,000 | 50,000 | 100 | 425,000 | Jan. | 1884 | 8.30 | 2,400,000 | Apl. | 1883 | 50 |
| 103 | North Belle Isle, s. | Nev.. | 10,000,000 | 100,000 | 100 | 250,000 | Mar | 1887 | .50 | 230,000 | May | 1888 | .50 |
| 104 | Ontario, s. L. | Utah | 15,000,000 | 150,000 | 100 | | | | | 9,350,000 | July | 1888 | .50 |
| 105 | Ophir, G. s. | Nev.. | 10,000,000 | 100,000 | 100 | 4,050,440 | Aug | 1887 | .50 | 1,595,800 | July | 1882 | 1.00 |
| 106 | Original, s. C. | Mont | 1,500,000 | 60,000 | 25 | * | | | | 120,000 | Apl. | 1888 | .05 |
| 107 | Osceola, C. | Mich | 1,250,000 | 50,000 | 25 | 480,000 | Apl. | 1876 | 1.60 | 1,122,500 | Jun | 1888 | 1 00 |
| 108 | Oxford, G. | N. S. | 1 | 125,000 | 125,000 | * | | | | 3,750,000 | Jan. | 1885 | .02 |
| 109 | Paradise Valley, G. s | Nev. | 10,000,000 | 100,000 | 100 | 62,000 | Apl. | 1888 | .15 | 150,000 | Apl. | 1887 | .10 |
| 110 | Parrott, C. | Mont | 1,800,000 | 180,000 | 10 | * | | | | 210,000 | July | 1888 | .20 |
| 111 | Peacock, s. G. C. | N.M. | 2,000,000 | 200,000 | 10 | * | | | | 60,000 | Nov. | 1886 | |
| 112 | Pleasant Valley, G. s. | Cal.. | 10,000,000 | 100,000 | 100 | 10,000 | Mar. | 1884 | .10 | 30,000 | Dec. | 1882 | .05 |
| 113 | Plutus, G. s. C. L. | Colo. | 2,000,000 | 200,000 | 10 | * | | | | 20,000 | Feb. | 1886 | .10 |
| 114 | Plymouth Con., G. | Cal.. | 5,000,000 | 50,000 | 50 | * | | | | 2,280,000 | Feb. | 1888 | .40 |
| 115 | Prussian, s. L. | Colo. | 1,500,000 | 150,000 | 10 | | | | | 1,032,000 | Jan. | 1883 | .10 |
| 116 | Quicksilver, pref., Q. | Cal.. | 4,300,000 | 43,000 | 100 | | | | | 1,417,692 | July | 1888 | 1.50 |
| 117 | " com., Q. | Cal.. | 5,700,000 | 57,000 | 100 | | | | | 151,000 | July | 1882 | .40 |
| 118 | Quincy, C. | Mich | 1,000,000 | 40,000 | 25 | 200,000 | Dec. | 1862 | | 4,970,000 | Aug. | 1888 | 5.00 |
| 119 | Richmond, s. L. | Nev.. | 1,350,000 | 54,000 | 25 | * | | | | 4,312,587 | Jun. | 1887 | 1.25 |
| 120 | Ridge, C. | Mich. | 500,000 | 20,000 | 25 | 219,939 | Mar | 1886 | .50 | 99,785 | Feb. | 1880 | .50 |
| 121 | Rising Sun, G. | Dak.. | 750,000 | 150,000 | 5 | * | | | | 52,000 | May | 1881 | .07½ |
| 122 | Robinson Con., G. L. | Colo. | 10,000,000 | 500,000 | 20 | * | | | | 545,000 | Mar. | 1886 | .05 |
| 123 | Robert E. Lee, s. L. | Colo | 10,000,000 | 500,000 | 20 | | | | | 100,000 | Dec. | 1882 | .50 |
| 124 | Rooks, G. | Vt... | 500,000 | 50,000 | 10 | * | | | | 61,000 | Apr | 1885 | .40 |
| 125 | Savage, s. | Nev.. | 11,200,000 | 112,000 | 100 | 6,324,000 | Sept | 1887 | .50 | 4,460,000 | July | 1869 | 3.00 |
| 126 | Security L. Mg., Mfg. | Colo. | 1,000,000 | 100,000 | 10 | * | | | | 50,000 | July | 1884 | |
| 127 | Shoshone, G. | Idah. | 150,000 | 150,000 | 1 | | | | | 7,500 | Apl. | 1883 | .01 |
| 128 | Sierra Buttes, G. | Cal.. | 3,225,000 | 122,500 | 10 | | | | | 1,492,557 | Apl. | 1888 | .12½ |
| 129 | Sierra Nevada, G. s. | Nev.. | 10,000,000 | 200,000 | 100 | 6,125,000 | July | 1888 | .25 | 102,000 | Jan. | 1871 | .10 |
| 130 | Silver Cord, G. s. L. | Colo. | 5,000,000 | 500,000 | 10 | | | | | 225,000 | Nov. | 1885 | .25 |
| 131 | Silver King, s. | Ariz. | 10,000,000 | 100,000 | 100 | 50,000 | Jun. | 1888 | .50 | 1,950,000 | July | 1887 | .25 |
| 132 | Silverton, G. s. L. | Colo. | 2,000,000 | 200,000 | 10 | * | | | | 80,000 | Nov. | 1886 | .02 |
| 133 | Small Hopes Cons., s. | Colo. | 5,000,000 | 250,000 | 20 | * | | | | 3,112,500 | Dec. | 1887 | .20 |
| 134 | Smuggler, s. L. | Colo. | 600,000 | 60,000 | 10 | | | | | 66,700 | Aug. | 1883 | .25 |
| 135 | Socorro, C. | N. M. | 250,000 | 2,500 | 100 | | | | | 4,000 | Mch | 1882 | .00¾ |
| 136 | Spring Valley, G. | Cal.. | 2,000,000 | 200,000 | 10 | 50,000 | Oct. | 1886 | .25 | 50,000 | Jan. | 1881 | .25 |
| 137 | Standard, G. s. | Cal.. | 10,000,000 | 100,000 | 100 | 25,000 | Oct. | 1884 | .25 | 8,995,000 | Jun. | 1888 | .05 |
| 138 | Stormont, s. | Utah | 500,000 | 500,000 | 1 | * | | | | 155,000 | Nov | 1881 | .05 |
| 139 | St. Joseph, L. | Mo.. | 1,500,000 | 150,000 | 10 | * | | | | 844,000 | Dec | 1887 | .20 |
| " | Surinam, G. | D. G. | 3,000,000 | 600,000 | 5 | * | | | | 105,000 | Nov | 1887 | .05 |
| 141 | Swansea, G. | Colo. | 600,000 | 60,000 | 10 | * | | | | 9,000 | Apl. | 1888 | .02½ |
| 142 | Syndicate, G. | Cal.. | 10,000,000 | 100,000 | 100 | 38,729 | July | 1882 | .15 | 48,308 | Sept | 1885 | .10 |
| 143 | Tamarack, C. | Mich. | 1,000,000 | 40,000 | 25 | 520,000 | Apl. | 1885 | 3.00 | 240,000 | July | 1888 | 3.00 |
| 144 | Tip Top, s. | Ariz. | 10,000,000 | 100,000 | 100 | 250,000 | Sept | 1883 | .25 | 100,000 | Nov. | 1881 | .20 |
| 145 | Tombstone, G. s. L. | Ariz. | 12,500,000 | 500,000 | 25 | * | | | | 1,250,000 | Apl. | 1882 | .10 |
| 146 | United Verde, C. | Ariz. | 3,000,000 | 300,000 | 10 | * | | | | 97,500 | Feb. | 1884 | .20 |
| 147 | Valencia, M. | N. H. | 150,000 | 1,500 | 100 | * | | | | 37,500 | Apl | 1886 | 2.50½ |
| 148 | Viola Lt., s. L. | Idah. | 750,000 | 150,000 | 5 | * | | | | 222,500 | Dec. | 1887 | .12 |
| 149 | Yankee Girl | Colo. | 2,500,000 | 250,000 | 10 | * | | | | 1,275,000 | July | 1887 | .10 |
| 150 | Yellow Jacket, G. s. | Nev.. | 12,000,000 | 120,000 | 100 | 5,448 000 | Dec | 1845 | .75 | 2,184,000 | Aug | 1873 | 1.50 |

G. Gold. S. Silver. L. Lead. C. Copper. * Non-assessable. † This company, as the Western, up to Dec. 10th, 1881, paid $1,450,000. ‡ Not assessable for three years. § The Deadwood previously paid $275,000 in eleven dividends, and the Terra $75,000. Previous to the consolidation in Aug., 1881, the California had paid $31,332,000 in dividends, and the Con. Virginia, $44,390,000. ** Previous to the consolidation of the Copper Queen with the Atlanta, Aug., 1885, the Copper Queen had paid $1,350,000 in dividends.

## NON-DIVIDEND-PAYING MINES.

| | Name and Location of Company. | | Capital Stock. | Shares. No | Par | Assessments. Total levied. | Date & am't of last. | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Agassiz Cons., s. L. | Colo. | $2,500,000 | 50,000 | $50 | * | | | |
| 2 | Allouez, c. | Mich | 2,000,000 | 80,000 | 25 | $657.000 | Jun | 1888 | 1.00 |
| 3 | Alpha Con., G. s. | Nev.. | 3,000,000 | 30,000 | 100 | 536 250 | Jan. | 1888 | 87½ |
| 4 | Alta, s. | Nev.. | 10,080,000 | 100,800 | 100 | 2,191,200 | May | 1888 | .50 |
| 5 | Amador, s. | Cal.. | 400,000 | 200,000 | 2 | * | | | |
| 6 | American Flag, s. | Colo. | 1,250,000 | 125,000 | 10 | 300,000 | Jun | 1877 | .50 |
| 7 | Anglo-Montana, Lt. | Mon. | 600,000 | 120,000 | 5 | | | | |
| 8 | Appalachian, Lt., G. | N. C. | 1,500,000 | 300,000 | 5 | | | | |
| 9 | Aspen Mg. & S., s. L. | Colo | 2,000,000 | 200,000 | 10 | | | | |
| 10 | Barcelona, G. | Nev.. | 5,000,000 | 200,000 | 25 | * | | | |
| 11 | Bechtel Con., G. | Cal.. | 10,000,000 | 100,000 | 100 | 175,500 | Jan. | 1883 | .10 |
| 12 | Belmont, s. | Nev.. | 5,000,000 | 50,000 | 100 | 735,000 | Apl. | 1886 | .10 |
| 13 | Best & Belcher, G. s. | Nev. | 10,080,000 | 100,800 | 100 | 2,029,390 | Jun. | 1888 | .25 |
| 14 | Big Pittsburg, s. L. | Colo. | 20,000,000 | 200,000 | 100 | * | | | |
| 15 | Bi-Metallic, s. | Mon. | 5,000,000 | 200,000 | 25 | * | | | |
| 16 | Black Oak, G. | Cal.. | 3,000,000 | 300,000 | 10 | * | | | |
| 17 | Boston Con., G. | Cal.. | 10,000,000 | 100,000 | 100 | 170,000 | Nov | 1888 | .25 |
| 18 | Bremen, s. | N. M | 5,000,000 | 500,000 | 10 | * | | | |
| 19 | Brunswick, G. s. | Cal.. | 2,000,000 | 400,000 | 5 | * | | | |
| 20 | Bullion, G. s. | Nev.. | 10,000,000 | 100,000 | 100 | 3,957,000 | Aug. | 1887 | .50 |
| 21 | Bve and Bye | Ariz. | 1,000,000 | 100,000 | 10 | * | | | |
| 22 | Calaveras, G. | Cal.. | 500,000 | 500,000 | 1 | * | | | |
| 23 | Carisa, G. | Wy | 500,000 | 100,000 | 5 | * | | | |
| 24 | Carupano, G. s. L. C. | Ven. | 200,000 | 100,000 | 2 | * | | | |
| 25 | Cashier, G. s. | Colo. | 500,000 | 250,000 | 2 | * | | | |
| 26 | Cen Countin'l, G. s. L. | C. & A | 2,000,000 | 200,000 | 10 | * | | | |
| 27 | Charles Dickens, G. s. | Idah. | 1,250,000 | 250,000 | 5 | * | | | |
| 28 | Cherokee, G. | Cal.. | 1,500,000 | 150,000 | 10 | | | | |
| 29 | Chollar, s. | Nev.. | 11,200,000 | 112,000 | 100 | 1,264,000 | July | 1888 | .50 |
| 30 | Cinnamon Mt., G. s. | Colo. | 750,000 | 150,000 | 5 | | | | |
| 31 | Cleveland, T. | Dak. | 1,000,000 | 500,000 | 2 | * | | | |
| 32 | Comstock, G. s. | Nev.. | 10,000,000 | 100,000 | 100 | 30 000 | Mar. | 1887 | .15 |
| 33 | Con. Imperial, G. s. | Nev. | 5,000,000 | 50,000 | 100 | 1,175,000 | Sept | 1887 | 25 |
| 34 | Con. Pacific, G. s. | Cal.. | 6,000 000 | 60,000 | 100 | 177,000 | Sept | 1887 | 10 |
| 35 | Cons. Silver, s. | Mo.. | 2,500,000 | 250,000 | 10 | | | | |
| 36 | **Cop. Queen Cons, c. | Ariz | 1,400 00 | 140,000 | 10 | | | | |
| 37 | Courtlandt | Colo. | 500,000 | 50,000 | 10 | | | | |
| 38 | Crescent, s. L. | Colo. | 3,000,000 | 300,000 | 10 | | | | |
| 39 | Crocker, s. | Ariz. | 10,000,000 | 100,000 | 100 | 105,000 | Feb. | 1888 | .20 |
| 40 | Crowell, G. | N. C | 500,000 | 500,000 | 1 | * | | | |
| 41 | Dahlonega, G. | Ga.. | 250,000 | 250,000 | 1 | * | | | |
| 42 | Dandy, s. | Colo. | 5,000,000 | 500,000 | 10 | | | | |
| 43 | Dardanelles, G. | Cal.. | 1,000,000 | 100,000 | 10 | | | | |
| 44 | Decatur, s. | Colo. | 1,500,000 | 300,000 | 5 | * | | | |
| 45 | Denver City, s. L. | Colo. | 5,000,000 | 500,000 | 10 | * | | | |
| 46 | Denver Gold, G. | Colo. | 300,000 | 60,000 | 5 | * | | | |
| 47 | Durango, G. | Colo. | 500,000 | 500,000 | 1 | * | | | |
| 48 | Eastern Dev. Co., Lt. | N. S. | 1,500,000 | 150 000 | 10 | 990,000 | Mar. | 1886 | 1.00 |
| 49 | El Cristo, G. s. | U.S.C | 1,000,000 | 500,000 | 2 | | | | |
| 50 | El Dorado, G. | Cal.. | 1,000,000 | 250,000 | 4 | * | | | |
| 51 | El Talento, G. | U.S.C | 1,000,000 | 500,000 | 2 | | | | |
| 52 | Empire, s. | Utah | 10,000,000 | 100,000 | 100 | | | | |
| 53 | Eureka Tunnel, s. L. | Nev.. | 10,000,000 | 100,000 | 100 | * | | | |
| 54 | Exchequer | Nev. | 10,000,000 | 100,000 | 100 | 770,000 | Feb. | 1888 | .20 |
| 55 | Found Treasure, G. s. | Nev.. | 10,000,000 | 100,000 | 100 | 18,000 | July | 1882 | .06 |
| 56 | Gogebic L. Syn., I. | Wis. | 5,000,000 | 200,000 | 25 | | | | |
| 57 | Gold Cup, s. | Colo. | 500,000 | 500,000 | 1 | * | | | |
| 58 | Golden Era, s. | Mon. | 2 000,000 | 200,000 | 10 | * | | | |
| 59 | Golden Rock, G. | Colo. | 5,000,000 | 500,000 | 25 | 229,314 | Dec. | 1885 | .25 |
| 60 | Gold Rock, G. | Cal.. | 1,000,000 | 500,000 | 2 | * | | | |
| 61 | Goodshaw, G. | Cal. | 10,000,000 | 100,000 | 100 | | | | |
| 62 | Grand Belt, C. | Tex. | 12,000,000 | 120,000 | 100 | | | | |
| 63 | Grand Duke | Colo. | 800,000 | 80,000 | 10 | | | | |
| 64 | Great Remance, G. | U.S.C | 1,000,000 | 500,000 | 2 | * | | | |
| 65 | Gregory-Bottali, G. | Colo. | 550,000 | 550,000 | 1 | * | | | |
| 66 | Gregory, G. s. | Mon. | 3,000,000 | 300,000 | 10 | | | | |
| 67 | Harlem M. & M. Co., G. | Cal. | 1 000,000 | 200,000 | 5 | | | | |
| 68 | Head Cent. & Tr. s. G | Ariz. | 10,000,000 | 100,000 | 100 | | | | |
| 69 | Hector, G. | Cal.. | 1,500,000 | 300,000 | 5 | | | | |
| 70 | Highland, C. | Mich | 500,000 | 25,000 | 25 | | | | |
| 71 | Hollywood | Cal.. | 200,000 | 100,000 | 2 | | | | |
| 72 | Hortense, s. | Colo. | 2,000,000 | 200,000 | 10 | | | | |
| 73 | Iron Gold & Silver, s. | N. M. | 2,000,000 | 200,000 | 10 | 280,000 | May | 1887 | 3.00 |
| 74 | Ironton, I. | Wis. | 1,000,000 | 40,000 | 25 | | | | |
| 75 | Iroquois, C. | Mich | 1,250,000 | 50,000 | 25 | | | | |
| 76 | J. D. Reymert | Ariz. | 10,000,000 | 100,000 | 100 | | | | |
| 77 | Julia Cons., G. s. | Nev. | 11,000,000 | 110,000 | 100 | 1,650,000 | Apl. | 1887 | .10 |
| 78 | Kearsarge, C. | Mich | 1 250,000 | 50,000 | 25 | 190,000 | Oct. | 1887 | 1.00 |
| 79 | Keystone, C. | Mich | 2,000,000 | 200,000 | 10 | * | | | |
| 80 | Lacrosse, G. | Colo. | 1 000,000 | 100,000 | 10 | * | | | |
| 81 | Lee Basin, s. L. | Colo. | 5,000,000 | 500,000 | 10 | * | | | |
| 82 | Lochiel, s. | N. M. | 2,000,000 | 200,000 | 10 | * | | | |
| 83 | Lucerne, s. | Colo | 5,000,000 | 500,000 | 10 | * | | | |
| 84 | Mammoth Bar, G. | Cal.. | 10,000,000 | 100,000 | 100 | 50,000 | Dec. | 1881 | |
| 85 | May Belle, G. | Cal.. | 10,000,000 | 100,000 | 100 | 84,000 | Mar. | 1887 | .15 |
| 86 | Mayflower Gravel, | Colo. | 1,000,000 | 100,000 | 10 | 325,000 | Apl. | 1888 | .2 |
| 87 | Medora, G. | Dak. | 250,000 | 250,000 | 1 | | | | |
| 88 | Mexican, s. | Nev.. | 10,000,000 | 100,000 | 100 | 2,700,760 | Jan. | 1888 | .25 |
| 89 | Middle Bar, G. | Cal. | 400,000 | 200,000 | 2 | * | | | |
| 90 | Mike & Starr, s. L. | Colo. | 1,000,000 | 200,000 | 5 | * | | | |
| 91 | Monitor, G. | Colo. | 100,000 | 100,000 | 1 | * | | | |
| 92 | Moose Silver, s. | Colo. | 3,000,000 | 300,000 | 10 | | | | |
| 93 | Nature, C. | Mich | 1,000,000 | 40,000 | 25 | | | | |
| 94 | Neath, G. | Colo. | 1,000,000 | 100,000 | 10 | | | | |
| 95 | Nevada Queen, s. | Nev | 10,000,000 | 100,000 | 100 | 130,000 | Dec. | 1887 | .50 |
| 96 | New Germany, G. | N. S. | 100,000 | 100,000 | 1 | * | | | |
| 97 | New Pittsburg, s. L. | Colo. | 2,000,000 | 200,000 | 10 | * | | | |
| 98 | North Standard, G. | Cal.. | 10,000,000 | 100,000 | 100 | 20,000 | Nov | | |
| 99 | Noonday | Cal.. | 600,000 | 60,000 | 10 | 208,000 | Dec. | 1881 | .10 |
| 100 | Oneida Gulch, G. | Cal.. | 500,000 | 125,000 | 4 | * | | | |
| 101 | Oriental & Milier, s. | Nev.. | 10,000,000 | 400,000 | 10 | * | | | |
| 102 | Osceola, G. | Nev.. | 5,000,000 | 50,000 | 25 | * | | | |
| 103 | Overman, G. s. | Nev. | 11,520,000 | 115,200 | 100 | 3,737,180 | Aug. | 1887 | .25 |
| 104 | Park, s. | Utah | 2,000,000 | 200,000 | 100 | * | | | |
| 105 | Peer, s. | Ariz. | 10,000,000 | 100,000 | 100 | 135,000 | Nov. | 1886 | .10 |
| 106 | Peerless, s. | Ariz. | 10,000,000 | 100,000 | 100 | 345,000 | Apl. | 1888 | .25 |
| 107 | Phenix, s. | Ariz. | 500,000 | 500,000 | 100 | * | | | |
| 108 | Phœnix, G. s. | Ark. | 5,000,000 | 200,000 | 1 | * | | | |
| 109

# NEW YORK MINING STOCKS QUOTATIONS.

## DIVIDEND-PAYING MINES.

| NAME AND LOCATION OF COMPANY. | July 21. H. | July 21. L. | July 23. H. | July 23. L. | July 24. H. | July 24. L. | July 25. H. | July 25. L. | July 26. H. | July 26. L. | July 27. H. | July 27. L. | SALES. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adams, Colo. | .... | .... | .... | .... | 3 00 | .... | 3 10 | .... | .... | .... | .... | .... | 200 |
| Alice, Mont | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Argenta, Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Bassick, Colo. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Belcher, Nev | 4 10 | .... | 4.10 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 600 |
| Belle Isle, Nev. | .65 | .... | .65 | .... | .62 | .61 | .... | .... | .... | .... | .... | .... | 3,200 |
| Bodie Cons., Cal. | 2.30 | 2.25 | .... | .... | .... | .... | 2.05 | .... | 2.25 | .... | .... | .... | 1,600 |
| Breece, Colo | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Bulwer, Cal | .80 | .... | .82 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 2,600 |
| Caledonia, Dak | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Central, Mich. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Chollar, Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Chrysolite, Colo. | .41 | .40 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 700 |
| Colorado Cent'l, Colo. | 2.00 | .... | .... | .... | 2.25 | .... | .... | .... | .... | .... | .... | .... | 2,100 |
| Cons. Cal. & Va., Nev. | .... | .... | 11.00 | .... | 9.87 | .... | 10.00 | .... | 10.00 | 9.88 | .... | .... | 560 |
| Crown Point, Nev | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Deadwood, Dak. | .... | .... | .... | .... | .... | .... | 2.00 | .... | 1.90 | .... | .... | .... | 300 |
| Dunkin, Colo. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Eureka Cons., Nev | .... | .... | .... | .... | .... | .... | 6.50 | .... | .... | .... | .... | .... | 100 |
| Father de Smet, Dak | .... | .... | .... | .... | .48 | .... | .47 | .... | .... | .... | .... | .... | 200 |
| Freeland, Colo. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Gould & Curry, Nev. | 2.95 | .... | 3.10 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 730 |
| Grand Prize, Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Green Mountain, Cal. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Hale & Norcross, Nev | 6 38 | 6.25 | 6.50 | .... | .... | .... | .... | .... | 6.00 | .... | 6.00 | .... | 1,280 |
| Holyoke, Idaho | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Homestake, Dak. | .... | .... | .... | .... | 11.25 | .... | 11.63 | .... | 11.00 | .... | 11.50 | 11.00 | 450 |
| Horn-Silver, Ut. | .... | .... | .80 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1,000 |
| Iron Hill, Dak. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Iron Silver, Colo. | .... | .... | .... | .... | .... | .... | 3.50 | .... | .... | .... | .... | .... | 35 |
| Leadville C., Colo. | .... | .... | .25 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 100 |
| Little Chief, Colo. | .... | .... | .... | .... | .24 | .23 | .... | .... | .... | .... | .... | .... | 400 |
| Little Pittsburg, Colo | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Martin White, Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Mono, Cal | 1.50 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 600 |
| Moulton, Mont | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Mount Diablo, Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Navajo, Nev. | 1.75 | .... | 1.75 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1,200 |
| North Belle Isle, Nev. | 3.60 | .... | 3.60 | 3.50 | 3.50 | .... | 3.55 | .... | .... | .... | .... | .... | 1,150 |
| Ontario, Ut. | .... | .... | 31.50 | .... | 32.00 | 31.50 | 32.00 | 31.25 | .... | .... | 31.50 | 31.00 | 650 |
| Ophir, Nev. | 6.88 | .... | 7.00 | 6.63 | .... | .... | 6.88 | .... | 6.75 | .... | .... | .... | 1,330 |
| Plutus, Colo. | .... | .... | 1.20 | .... | 1.30 | .... | 1.25 | .... | .... | .... | 1.25 | .... | 500 |
| Plymouth, Cal. | 8.25 | 8.13 | 8 13 | .... | 8.00 | .... | .... | .... | .... | .... | 8.25 | 8.00 | 660 |
| Quicksilver Pref., Cal | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| " Com., Cal | .... | .... | 11.13 | 11.00 | .... | .... | 11.38 | 10 88 | 11.00 | .... | 10.63 | 10.38 | 1,200 |
| Robinson Cons., Colo. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Savage, Nev. | 4.10 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 410 |
| Sierra Nevada, Nev. | 3.45 | .... | 3.60 | 3.40 | .... | .... | .... | .... | 3.10 | .... | .... | .... | 2,150 |
| Silver King, Ariz. | .... | .... | .... | .... | 1.60 | 1.50 | 1.75 | 1.65 | .... | .... | .... | .... | 240 |
| Silver Mg. of L. V. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .45 | .40 | 1,100 |
| Small Hopes, Colo. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1.95 | .... | 100 |
| Standard, Cal. | .... | .... | .... | .... | .... | .... | .... | .... | 1.25 | .... | .... | .... | 100 |
| Yellow Jacket, Nev. | 4 00 | .... | 4.60 | 4.45 | .... | .... | .... | .... | .... | .... | .... | .... | 750 |

## NON-DIVIDEND-PAYING MINES.

| NAME AND LOCATION OF COMPANY. | July 21 H. | July 21 L. | July 23. H. | July 23. L. | July 24. H. | July 24. L. | July 25. H. | July 25. L. | July 26. H. | July 26. L. | July 27 H. | July 27 L. | SALES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alta, Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Amador, Cal. | 2.20 | .... | 2.20 | .... | 2.20 | .... | 2.20 | .... | 2.20 | .... | 2.20 | .... | 1,800 |
| Am'can Flag, Colo. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Astoria, Cal. | .24 | .... | .24 | .... | .24 | .... | .25 | .24 | .24 | .... | .24 | .... | 10,700 |
| Barcelona, Nev. | 1.05 | 1.00 | .... | .... | 1.05 | .... | .90 | .... | .85 | .... | .... | .... | 1,400 |
| Bechtel Con., Cal. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Best & B'lener, Nev. | 4.35 | .... | 4.40 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 800 |
| Brunswick, Cal. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Bullion, Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1.55 | .... | 150 |
| Carupano, Venes. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Cashier, Colo | .... | .... | .... | .... | .... | .... | .07 | .06 | .06 | .... | .... | .... | 500 |
| Castle Creek, Id. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Cleveland, Dak. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Columbia & Beaver | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Confidence, Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Con. Imperial, Nev | .42 | .... | .48 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1,700 |
| Con. Pacific | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Denver City, Colo. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Eastern Oregon | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| El Cristo, U. S. Col. | 1 20 | 1.15 | .... | .... | 1.15 | 1.05 | 1.10 | 1.05 | 1.10 | .96 | 1.05 | .90 | 5,000 |
| Exchequer, Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1.40 | .... | 150 |
| Found Treas'e, Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Hector, Cal. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Hollywood, Cal. | .39 | .... | .39 | .... | .40 | .39 | .40 | .... | .40 | .39 | .40 | .39 | 5,000 |
| Huron, Mich. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Julia, Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .50 | .... | 200 |
| Kingst'n & Pemb'ke | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Kossuth, Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Lacrosse, Colo | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Lee Basin, Colo | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Mexican, Nev. | 4.00 | .... | 4.00 | .... | 3.75 | .... | .... | .... | 3.75 | .... | .... | .... | 1,210 |
| Middle Bar, Cal. | .44 | .... | .45 | .44 | .45 | .... | 44 | .... | .45 | .... | .44 | .... | 3,200 |
| Monitor, Colo. | .... | .... | .... | .... | .... | .... | .... | .... | .12 | .10 | .11 | .09 | 3,400 |
| Ori'nt'l & Mil'r. Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Phœnix Lead, Colo. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Phœnix of Ark. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Potosi, Nev. | .... | .... | 3.20 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 400 |
| Proustite, Idaho | 1.00 | .... | 1.00 | .... | 1.00 | .... | 1.05 | 1.00 | 1.00 | .... | 1.00 | .... | 3,000 |
| Rappahan'k, Va. | .11 | .... | .12 | .09 | .... | .... | .11 | .... | .11 | .... | .11 | .10 | 3,800 |
| San Sebastian, S'nS | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Santiago, U. S. Col. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Scorpion, Nev | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .70 | .... | 200 |
| ‡Security, Colo. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Shoshone, Idaho | .13 | .... | .13 | .... | .13 | .... | .14 | .... | .14 | .... | .14 | .12 | 6,500 |
| Silver Cliff, Colo | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Silver Cord, Colo. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Silver Queen, Ariz. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Sutro Tunnel, Nev. | .10 | .09 | .08 | .... | .07 | .05 | .08 | .06 | .07 | .06 | .07 | .06 | 24,100 |
| Sutter Creek, Cal. | 1.10 | .... | 1.10 | .... | 1.10 | .... | 1.15 | 1.10 | 1.10 | .... | 1.10 | .... | 2,300 |
| Taylor Plumas, Cal. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Tornado, Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Union Cons., Nev. | 3.75 | 3.50 | 3.90 | 3.60 | .... | .... | 3.60 | .... | .... | .... | 3.75 | .... | 1,950 |
| Utah Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |

*Assessment unpaid. †Assessment paid ‡Dealt in at the New York Stock Ex. Unlisted Securities Dividend shares sold, 28,745. Non-dividend shares sold, 77,260. Total New York, 106,005.

# BOSTON MINING STOCK QUOTATIONS.

| NAME OF COMPANY | July 20. | | July 21. | | July 23. | | July 24. | | July 25 | | July 26. | | SALES. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Atlantic, Mich. | .... | .... | .... | .... | *16 | .... | .... | .... | *16¾ | 16.00 | 17.00 | 16.75 | 725 |
| Bodie, Cal. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Bonanza Developm't | .... | .... | 1⅜ | .... | 1.50 | .... | .... | .... | 1.94 | .... | 1.53 | 1.38 | 850 |
| Boston & Mont., Mont | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Breece, Colo. | .... | .... | .27½ | .... | .28 | .... | .28 | .... | .28 | .... | .... | .... | 850 |
| Calumet & Hecla | 240 | 240 | *243 | 242 | *246 | 243 | *248 | 246 | 252 | 249 | 260 | 252 | 807 |
| Catalpa, Colo. | .20 | .... | .... | .... | .21 | .... | .... | .... | .20 | .... | .... | .... | 1,700 |
| Central, Mich. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Chrysolite, Colo | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Con. Cal & Va., Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Dunkin, Colo. | *.80 | .75 | .... | .... | .... | .... | .79 | .... | .... | .... | .80 | .... | 700 |
| Enterprise | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Eureka, Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Franklin, Mich. | *13 | .... | 13.75 | 13.00 | *15 | 14.00 | *15 | 14 88 | *17¾ | 14.75 | 18.00 | 17.00 | 8,505 |
| Hale & Norcross, Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Honorine, Utah | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Little Chief, Colo. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Little Pittsburg, Colo. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Martin White, Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Mono, Cal. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Napa, Cal. | 1⅞ | .... | 1⅞ | .... | 2.00 | .... | 1.75 | .... | 1.75 | .... | .... | .... | 700 |
| Osceola, Mich. | *18½ | 18.50 | *18⅝ | .... | 19.00 | .... | .... | .... | *21¼ | 19.38 | 21.75 | 21.25 | 1,337 |
| Pewabic, Mich. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 2.25 | .... | 100 |
| Quincy, Mich. | .... | .... | 68.50 | .... | *68½ | .... | 68.50 | .... | .... | .... | .... | .... | 76 |
| Ridge, Mich. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Sierra Nev., Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Silver King, Ariz. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Standard, Cal. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Tamarack, Mich. | .... | .... | *155 | .... | .... | .... | .... | .... | 154 | 153 | 155 | 154 | 95 |

| NAME OF COMPANY. | July 20. | | July 21. | | July 23. | | July 24. | | July 25. | | July 26. | | SALES. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Allouez, Mich. | .... | .... | .... | .... | 1.13 | 1.00 | †2.13 | 1.06 | .... | .... | †2.38 | .... | 650 |
| Arnold, Mich. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .22 | .20 | 700 |
| Aztec, Mich. | .... | .... | .08 | .... | .07 | .... | .08 | .07 | .... | .... | .10 | .... | 1,400 |
| Bos. & Mont., Mont. | 47.00 | 46.00 | 47.00 | .... | 48.00 | 47.00 | 48.00 | .... | 48.75 | 48.00 | 49.00 | 48.50 | 1,356 |
| Bowman | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Brunswick, Cal. | .... | .... | .... | .... | .... | .... | .17 | .... | .... | .... | .... | .... | 100 |
| Crescent, Colo. | .... | .... | .10 | .... | .... | .... | .... | .... | .11 | .... | .... | .... | 1,100 |
| Cusi, N. Mex. | .08 | .... | .... | .... | .09 | .... | .... | .... | .... | .... | .... | .... | 1,450 |
| El Cristo, U.S. Col | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Everett | .... | .... | .25 | .... | .25 | .... | .... | .... | .25 | .... | .25 | .... | 600 |
| Hanover, Mich. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .12 | .... | 400 |
| Humboldt, Mich. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Hungarian, Mich. | .... | .... | .... | .... | .15 | .... | .... | .... | .... | .... | .16 | .15 | 450 |
| Huron, Mich. | 4.00 | .... | 4.25 | .... | .... | .... | .... | .... | 4.50 | .... | 4.50 | .... | 50 |
| Kearsarge, Mich. | 5.75 | .... | .... | .... | .... | .... | .... | .... | 6 50 | 6.00 | 7.50 | 6.25 | 2,250 |
| Mesnard, Mich. | .... | .... | .... | .... | .20 | .... | .... | .... | .... | .... | .21 | .20 | 800 |
| National, Mich. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 2.50 | .... | 100 |
| Oriental & M., Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .10 | .... | .... | .... | 500 |
| Rappahannock, Va. | .... | .... | .12 | .... | .... | .... | .12 | .... | .11 | .... | .... | .... | 1,100 |
| Royal, Mich. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Security, Colo. | .06 | .03 | .... | .... | .04 | .... | .... | .... | .05 | .... | .... | .... | 3,820 |
| Shoshone Idaho | .14 | .... | .14 | .13 | .13 | .... | .13 | .... | .14 | .13 | .14 | .... | 1,800 |
| Simpson, Utah | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| South Side, Mich. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .20 | .... | 200 |
| Sullivan. | .33 | .... | .35 | .... | .34 | .... | .34 | .... | .35 | .34 | .34 | .33 | 1,300 |
| Sutro Tunnel, Nev. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Taylor Plumas, Cal | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |
| Winthrop, Mich. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ..... |

*Ex dividend. † Assessment paid. Boston: Dividend shares sold, 16,505. Non-dividend shares sold, 20,576. Total Boston, 37,081.

# COAL STOCKS.

| NAME OF COMPANY. | Par val. of sh'rs. | July 21. H. | July 21. L. | July 23. H. | July 23. L. | July 24. H. | July 24. L. | July 25. H. | July 25. L. | July 26. H. | July 26. L. | July 27. H. | July 27. L. | Sales. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Barclay Coal | .... | †16 | .... | †16 | .... | †16 | .... | †16 | .... | †16 | .... | .... | .... | ——— |
| Buck Mt. Coal | .... | *4 | .... | *4 | .... | *1 | .... | *4 | .... | *4 | .... | .... | .... | ——— |
| Ches. & O. RR. | 100 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ——— |
| Chic. & Ind. Coal RR. | 100 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ——— |
| Do. pref. | 100 | .... | .... | .... | .... | .... | .... | .... | .... | 90 | .... | .... | .... | 100 |
| Col. & Hocking Coal | 100 | .... | .... | 23 | 21½ | 22¾ | .... | 22⅞ | .... | 23⅜ | 22¾ | 23 | 22½ | 1,675 |
| Col., C. & I | 100 | .... | .... | 36⅜ | 35½ | 36¾ | 35¾ | 36½ | 36 | 36 | 35½ | .... | .... | 2,050 |
| Connellsville Gas Coal | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ——— |
| Consol. Coal | 100 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ——— |
| Del. & H. C. | 100 | .... | .... | 114⅝ | 113¾ | 115 | 114⅜ | 115⅛ | 114½ | 114⅞ | 114⅛ | 114¼ | .... | 7,970 |
| D., L. & W. RR. | 50 | 133¾ | 133½ | 134¾ | 133¼ | 135¾ | 134⅝ | 136 | 134⅞ | 135¼ | 134½ | 135⅝ | 134¼ | 124,368 |
| Hocking Valley | 100 | .... | .... | 24 | 23½ | 24 | .... | 24⅝ | 24 | 24¼ | 24½ | 24¼ | 23¾ | 1,197 |
| Hunt. & Broad Top | .... | .... | .... | .... | .... | 17 | .... | .... | .... | .... | .... | .... | .... | 100 |
| Do. pref. | .... | .... | .... | .... | .... | 40 | .... | .... | .... | 39⅝ | .... | .... | .... | 111 |
| Lehigh C. & N. | 50 | 49¼ | .... | 49¼ | .... | .... | .... | .... | .... | .... | .... | .... | .... | 123 |
| Lehigh Valley RR. | 50 | 53 | 52⅞ | 53 | 52⅞ | 53¼ | 53 | 53⅛ | 53 | 53⅛ | 53 | .... | .... | 1,460 |
| L. & W. C. & I. Co | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ——— |
| Mahoning Coal RR. | 100 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ——— |
| Marshall Con. Coal | 100 | .... | .... | .... | .... | .... | .... | 13 | .... | .... | .... | .... | .... | 100 |
| Maryland Coal | 100 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ——— |
| Montauk Coal | 50 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ——— |
| Morris & Essex | 100 | .... | .... | .... | .... | .... | .... | 143 | .... | 143 | .... | .... | .... | 400 |
| New Central Coal | 100 | 11½ | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 100 |
| N. J. C. RR. | 50 | 83 | .... | 83 | .... | 83⅞ | 83 | 83¾ | 83 | 83¾ | 83½ | 83⅜ | .... | 6,000 |
| N. Y. & S. Coal | 100 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ——— |
| N. Y., Susq. & Western | 100 | 9 | .... | 9¼ | 9¼ | .... | .... | .... | .... | 9¼ | .... | 9 | .... | 1,320 |
| Do. pref. | 100 | .... | .... | 31⅞ | 31½ | 31⅞ | 31⅝ | 31⅝ | 31¼ | 31⅞ | 31¾ | 31⅝ | .... | 4,300 |
| N. Y. & Perry C. & I. | 100 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ——— |
| Norfolk & Western R.R. | 100 | .... | .... | 19 | 18 | 18⅞ | .... | 19 | 18⅝ | 18⅞ | 18¼ | 18¾ | .... | 2,032 |
| Do. pref. | 50 | 50⅝ | 50 | 50⅝ | 50 | 50½ | 50 | 51 | 50 | 50⅝ | 50 | 51 | 50¾ | 8,734 |
| Penn. Coal | 50 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ——— |
| Penn. Gas Coal | .... | †49¼ | .... | †49¼ | .... | †49½ | .... | †49½ | .... | .... | .... | .... | .... | ——— |
| Penn. RR. | 50 | 54⅛ | 54 | 54⅛ | 54 | 54⅛ | 53⅞ | 54 | 53⅞ | 54 | 53⅞ | .... | .... | 3,625 |
| Ph. & R. RR.** | 50 | 62 | 51⅞ | 63 | 61⅝ | 63½ | 62⅝ | 64 | 63⅜ | 64¼ | 63¾ | 64⅝ | 64¼ | 366,716 |
| Tennessee C. & I. Co. | 100 | 28¾ | 28½ | 29 | 28¼ | 29⅜ | 28¾ | 28¾ | 27⅞ | 28¾ | 28 | 28¼ | 28 | 6,460 |
| Westmoreland Coal | 100 | †68 | .... | †68 | .... | †68 | .... | †68 | .... | †68 | .... | .... | .... | ——— |
| Whitebreast Fuel Co. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | ——— |
| Wyoming Valley Coal | .... | †47 | *46 | †47 | *46½ | †47 | *46½ | *46 | .... | †46 | .... | .... | .... | ——— |

*Bid. †Asked.
**Of the sales of this stock, 72,866 were in Philadelphia, and 293,850 in New York. Total sales, 538,941.

## San Francisco Mining Stock Quotations.

| COMPANY. | CLOSING QUOTATIONS. July 20. | July 21. | July 23. | July 24. | July 25. | July 26. |
|---|---|---|---|---|---|---|
| Alpha | .... | .... | .... | .... | .... | ..... |
| Alta | 1.55 | 1.55 | 1.60 | 1.55 | 1.55 | 1.50 |
| Belcher | .... | .... | .... | .... | .... | ..... |
| Belle Isle | .... | .... | .60 | .... | .... | ..... |
| Best & Bel. | 3.95 | 4.10 | 4.25 | 3.95 | .... | ..... |
| Bodie | 2.00 | 2.00 | 1.85 | 1.95 | 2.20 | 2.15 |
| Bulwer | .... | .... | .75 | .... | .75 | .80 |
| Chollar | 2.80 | 2.85 | 2 85 | 2.80 | 2.95 | 2.90 |
| C'm'weal'h | .... | .... | 5.25 | 5.00 | .... | ..... |
| Con. C. & V | 10.00 | 10.87½ | 9.50 | 9.75 | 9.87½ | 9.87½ |
| Con. Pac. | .... | .... | .... | .... | .... | ..... |
| Crown Pt. | 4.20 | 4.30 | 4.30 | 4.30 | 4.35 | 4.40 |
| Eureka C. | .... | .... | .... | .... | .... | ..... |
| Gould & C. | 2.80 | 2.80 | 3.35 | 3.30 | 3.40 | 3.35 |
| Grd. Prize. | 2.40 | 2.55 | 2.60 | 2.45 | 2.50 | 2.40 |
| Hale & N. | 6.00 | 6.00 | 5.62½ | 5.62½ | 5.62½ | 5.62½ |
| Mexican | 3.65 | 3.70 | 3.65 | 3.50 | .... | 3.65 |
| Mono | 1.20 | 1.30 | 1.20 | .... | 1.45 | ..... |
| Mt. Diablo | .... | .... | .... | .... | 3.05 | 2.95 |
| Navajo | 1.80 | 1.85 | 1.85 | 1.85 | 1.85 | ..... |
| Nev. Queen | 6.75 | 7.12½ | 6.75 | 6.50 | 6.50 | 6.50 |
| N. Belle I. | 3.75 | 3.70 | 3.85 | 3.50 | 3.60 | ..... |
| Ophir. | 6.62½ | 6.50 | 6.87½ | 6.50 | 6.62½ | 6.37½ |
| Potosi. | 2.75 | .... | 2.70 | 2.60 | .... | ..... |
| Savage | 3.65 | 3.65 | 3.45 | 3.25 | 3.30 | 3.35 |
| Scorpion | .... | .... | .... | .... | .... | ..... |
| Sierra Nev | 3.25 | 3.40 | 3.25 | 3.25 | .... | 3.30 |
| Sutro Tun. | .... | .... | .... | .... | .... | ..... |
| Tip Top | .... | .... | .... | .... | .... | ..... |
| Union Con. | 3.50 | 3.65 | 3.35 | 3.30 | 3.40 | 3.40 |
| Utah | 1.40 | .... | 1.40 | 1.45 | 1.35 | 1.35 |
| Yellow Jkt. | .... | 4.40 | 4.30 | 4.35 | 4.35 | ..... |

yesterday and to-day for muck bars at prices for best that are wanted for poorest. There will be a little less best refined iron made this fall on account of the desire of so many buyers to buy their stock at the very lowest figures. No changes have been made, and none will be, unless upward, though there is not much danger of that. Skelp iron was taken at a little off to keep things going, but there is no recognized shading from card rates. There is too little business done in nails to talk about. The sheet-iron manufacturers keep up their whistling, but there is a tendency in some quarters toward deterioration in order to get a decent margin. The wrought-iron pipe makers are able to show an improving trade condition, and all small orders, and there are but few others, are at full card prices. The users of merchant steel have been obliged to do some buying. The plate and tank iron makers do not reach out after all the business that could be had, because it can be had only at prices that leave no margin. The usual strong hopes are expressed concerning a good full business in structural shapes. The shading on angles and tees that has been going on all spring and summer could be put to an end if the buyers who are ordering in a piecemeal way were to order big. They all seem to understand this and take it slowly. It is safe to say that some ten to twelve thousand tons of steel rails have been contracted for at less than thirty dollars, but there is no way of proving it. Buyers and sellers of old rails are higgling over a difference of fifty cents for a few hundred tons in store. There is more inquiry for scrap, and yardmen and importers are around seeing what orders they can pick up.

## FINANCIAL.

NEW YORK, Friday Evening, July 27.

The mining stock market here needs a few old-time "bonanzas" to stir it up, and make things lively, and if rumor is to be believed, a boom in Barcelona, a Nevada mine, is in contemplation among those interested. We shall devote some attention to this mine in an early issue; in the mean time, it is freely, perhaps just a little too freely, whispered that the stock will shortly jump up in a surprising manner. The mine possesses a very large body of high-grade argentiferous zinc blende.

The old stand-bys, the good mines, are working along steadily, piling up dividends. The cats are comparatively harmless, having for the most part assumed a condition of "innocuous desuetude," from which, let us hope, they will never awaken.

Some stockholders of the Plymouth Consolidated are becoming impatient with the management, and want to know why information is not given as to the "fire." Some even insinuate that the insiders are trying to get stock cheap. Certainly more information than has yet been given should be made public, both as to the fire, if it exists, and of the condition of the mine when it was closed. Was it in bonanza?

Iron Silver, which is rarely dealt in, shows a sale this week at $3.50, and Colorado Central a few at from $2 to $2.25. Small Hopes appeared on the list to-day at $1.95. Plutus, which has been dormant for many months shows sales at from $1.30 to $1.15. Little Chief was quiet at 23@24c., the same may be said of Leadville at 25c. Chrysolite at 40@41c. Monitor declined from 12 to 9c. Cashier shows some transactions at 6@7c.

Silver King was quiet, selling at from $1.50 to $1.75.

El Cristo continues on the downward grade, and this week reached 90c., at which price sales were made to-day.

Proustite was steady at from $1@$1.05 and Shoshone at from 12@15c.

Ontario continues to show an upward movement, and went from $31.25@$32, but to-day declined again to $31. Horn Silver shows one sale at 80c.

Rappahannock reached 9c. in the beginning of the week, but toward the close advanced again to 11c.

Some 2500 shares of Silver Mining of Lake Valley sold to-day at 40@45c.

A few transactions were made in Deadwood-Terra at from $1.90 to $2. In Father de Smet at 47 to 48c. Home stake declined from $11.63 to $11.

Barcelona shows a downward movement, going from $1.05 to 85c. No doubt the parties who are said to be picking up the stock are depressing the price.

Eureka, which has been neglected for many weeks, shows one sale at $6.50.

North Belle Isle showed considerable activity, selling at from $3.50 to $3.60. Belle Isle declined from 65 to 61c. Navajo was firm at $1.75.

The transactions in Sutro Tunnel this week amounted to 24,100 shares. The price declined from 10@5c., and ruled at 6@7c. to-day. Consolidated California & Virginia went from $11@$9.88. Yellow Jacket advanced from $4@$4.60. Savage shows one sale at $4.10. Ophir varied from $6.63 to $7. Hale and Norcross declined from $6.50 to $6. Gould & Curry went from $6.25 to $6.50. Belcher was steady at $4.10. Union Consolidated went from $3.50 to $3.90, and later declined to $3.60. Scorpion shows one sale at 70c. Potosi at $3.20. Mexican went from $4 to $3.75. Julia at 50c. Exchequer at $1.40. Consolidated Imperial advanced from 42 to 48c. Best & Belcher from $4.35 to $4.40.

Plymouth Consolidated varied from $8 to $8.25.

In the Quicksilver stocks sales are reported only in Common, which declined from $11.38 to $10.38.

Standard shows one sale at $1.25. Bodie Consolidated declined from $2.30@$2.05, but later shows a sale at $2.25. Bulwer was dealt in only in the beginning of the week at 81@82c. Mono appeared on the list only on Saturday, when it sold at $1.50.

Amador remained all week with daily transactions at $2.20; Middle Bar quoted at 44@45c.; Hollywood at 39@40c.; Astoria at 24@25c., and Sutter Creek at from $1.10@$1.15.

### Auction Sale of Stocks.

The following securities were sold at auction in this city on the 25th inst: 2 shares Standard Oil Trust Company, 177; 200 shares Hortense Mining Company, $3; 1 share Anchor Oil Company, 65; $3000 Delaware & Hudson Canal Company first mortgage 7 per cent registered bonds, due 1891, 106¼; $1000 Oxford Iron and Nail Company first mortgage 6 per cent bond, due 1913, 53; $500 Oxford Iron and Nail Company trust and mortgage 6 per cent bond, due 1905, 27; $100 St. Louis Ore and Steel Company 6 per cent income bond, due 1917, 23½; 20 shares Oxford Iron and Nail Company, $25; 39 shares Clearfield Bituminous Coal Corporation, preferred, $5 per share.

### Dividends.

Boston & Montana Consolidated Copper and Silver Mining Company, of Montana, has declared its first dividend of $2 per share, or $200,000, payable August 20th to stockholders of record at the close of business, July 28th, at Boston, Mass.

Hubert Mining Company, of Colorado, has declared a dividend, No. 39, of eight cents per share, or $4,000, payable at Denver, Col., July 17th.

Parrot Copper and Silver Mining Company, of Montana, paid a dividend of $36,000 July 1st.

### Assessments.

| COMPANY. | No. | When levied. | D'l'nq't in office. | Day of sale. | Am'nt per share. |
|---|---|---|---|---|---|
| Belcher, Nev ..... | 35 | July 18 | Aug. 22 | Sept. 12 | .50 |
| Best & Belcher, Nev. | 40 | June 5 | July 10 | July 31 | .25 |
| Big Hole Pl., Utah... | 3 | May 7 | *J'ne12 | Aug. 15 | .01 |
| Bodie Tunnel, Cal... | 15 | June 5 | July 9 | July 31 | .25 |
| Challar, Nev.. .... | .... | July 20 | ..... | ..... | .50 |
| Cœur d'Alene, Idaho | 1 | July 6 | Aug. 6 | Aug. 27 | .05 |
| Diana, Nev ..... | 7 | June 5 | July 10 | July 31 | .10 |
| Dickert & Myers, Ut. | 1 | June 13 | July 21 | Aug. 15 | 2.50 |
| Found Treasure, Nev | 3 | July 12 | Aug. 17 | Sept. 7 | .06 |
| Gibraltar Cons., Cal. | 21 | June 9 | Aug. 9 | Sept. 10 | .20 |
| Gould & Curry, Nev. | 59 | June 22 | July 6 | Aug. 16 | .50 |
| Iron Hill, Dak.. .... | 13 | June 27 | July 30 | Aug. 18 | .04 |
| Keyes, Nev ..... | 2 | July 19 | Aug. 23 | Sept. 24 | .50 |
| Live Oak Drift, Cal.. | 9 | June 13 | July 17 | Aug. 16 | .05 |
| Lone Jack, Cal..... | 2 | July 11 | Aug. 16 | Sept. 7 | .10 |
| Mikado, Mich.. ..... | .... | June12 | July 13 | ..... | .15 |
| New Era, Dak..... | 4 | June11 | July 12 | July 30 | .01 |
| Potosi, Nev. ..... | 30 | July 13 | Aug. 16 | Sept. 5 | .50 |
| Rattler Gilroy, Dak. | 12 | June 17 | July 30 | Aug. 18 | .01 |
| Ruby Bell, Dak. ... | 7 | June 9 | July 19 | Aug. 9 | .01 |
| Russell, Cal..... | 2 | June 6 | July 9 | July 31 | .10 |
| Sampson, Utah..... | ... | July 5 | Aug. 7 | Sept 7 | 1 00 |
| San Luis Cons., Cal. | 18 | July 12 | Aug. 9 | Aug. 23 | † |
| Seaury-Calkins Dak | 9 | June 5 | July 10 | Aug. 1 | .00½ |
| Seg. Belcher., Nev.. | 1 | June 5 | July 9 | July 30 | .25 |
| Sierra Nevada, Nev . | 92 | July 10 | Aug. 14 | Sept. 1 | .25 |
| Silver King, Ariz.... | 1 | June 22 | July 30 | Aug. 23 | 50 |
| Spring Valley, Cal... | 3 | July 17 | Aug. 25 | Sept. 24 | .10 |
| Summit, Cal..... | 10 | June 8 | July 11 | July 31 | .10 |

* Delinquent day and day of sale postponed to dates given above. † 0.00156.

Assessment No. 6, levied April 18th on the stock of the Bryant, Czar, General Miller, Jamestown, Jeannette, and Maryland mining companies, of Alaska, is now delinquent, and will be sold August 11th in San Francisco

Twenty-six thousand shares of the Michigan Gold Company, represented by certificates Nos. 1, 2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 56, 57, 58, 61, 62, 63, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121 will be sold at public auction at Ishpeming, Mich., August 6th, at 10 o'clock A.M., the holders having failed to pay the assessment.

### Pipe Line Certificates.

Messrs. Watson & Gibson, brokers, 49 Broadway, report for the week as follows:

The oil market for the past week has developed no special feature. There has been quite a dearth of news from the field, and there has been a notable absence of orders from the outside trading public. The demand for refined has continued good and it has ruled steady at about 7⅛c. There was an effort made to depress the price of crude at the close of to-day's market, and it may succeed in getting it down lower, but on any decided reactions we should consider it a good purchase.

From a late report of one of the consuls of the United States, we extract a few factors of interest regarding the Russian petroleum trade. "The production of crude petroleum in Russia during the past year shows a large increase over any former year. The amount of crude used was over 45,000 barrels per day, and no one knows how much was lost, but there is no doubt that the loss was at least 20 per cent, and that the actual amount of crude taken from the ground during the year was nearer 55,000 barrels per day. From one well it is said that more 1,000,000 barrels were lost. This well, called the Mining Company Well, was struck at a depth of 790 feet, and flowed the full size of the pipe, 12 inches, to a height of 200 feet above the derrick for 69 days. It was some days before the oil from it could be directed into reservoirs, and then they were not of sufficient capacity to hold its production. The lowest estimate of this well for the 69 days is 3,000,000 barrels. There has been no new territory discovered in the past year, and very little effort has been made to find any, notwithstanding the fact that the theory advanced by some of Baku's eminent scientists, that the complete exhaustion of the present developed territory is near at hand, seems to be gaining supporters. One of these scientific gentlemen says that the territory will not last more than three years, in which opinion it is said he is backed by some of the people having the heaviest financial interests in the trade. Owing to the large production, the price of crude at the wells was very low the whole of the past year, the average being not more than 3¼ cents per barrel, but later the price rose to 6 and 7 cents.

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

| | Opening. | Highest. | Lowest. | Closing. | Sales. |
|---|---|---|---|---|---|
| July 21.. .. .. | 84⅛c. | 84¾c. | 83⅛c. | 83⅝c. | 542,000 |
| 23.. .... | 83½ | 85 | 82⅞ | 84⅜ | 606,000 |
| 24.. .... | 84⅜ | 84⅞ | 83 | 83¼ | 826,000 |
| 25.. .... | 82⅞ | 83¼ | 82¼ | 82¼ | 588,000 |
| 26.. .... | 82⅛ | 82⅞ | 81½ | 81⅜ | 884,000 |
| 27.. .... | 81½ | 82½ | 81 | 81 | 584,000 |
| Total sales in barrels..... | | | | | 4,030,000 |

NEW YORK STOCK EXCHANGE.

| | Opening. | Highest. | Lowest. | Closing. | Sales. |
|---|---|---|---|---|---|
| July 21.. .... | 84c. | 84¾c. | 83⅛c. | 83⅝c. | 486,000 |
| 23.. .... | 84 | 84¾ | 82⅞ | 84⅜ | 485,000 |
| 24.. .... | 84⅝ | 84⅞ | 83¼ | 83⅛ | 532,000 |
| 25.. .... | 83 | 83¼ | 82⅛ | 82⅝ | 449,000 |
| 26.. .... | 82⅝ | 82⅞ | 81½ | 81⅞ | 497,000 |
| 27.. .... | 81⅞ | 82⅜ | 81 | 81 | 371,000 |
| Total sales in barrels..... | | | | | 2,820,000 |

### Boston Mining Stocks.

July 26.

[From our Special Correspondent.]

The market for copper stocks has developed quite a boom the past few days and it looks now as if a very active movement had been started which will give this class of stocks great prominence during the next few months. The movement was started on the developments at the Franklin mine, which indicated a big find of high-grade copper and the demand for the stock soon advanced the price to about $18, ex dividend. The other stocks soon fell into line, and all have felt the influence and show handsome advances over last week's prices. Calumet & Hecla sold up to $260, an advance of $20. The upward tendency was caused by a statement issued by the company of its financial condition on the 30th of April last, showing a balance of assets over liabilities of nearly $2,000,000, and this based upon copper at 9c. per pound. The *Herald* of this morning says: The net assets April 30th, 1887, were $1,847,890.72, or nearly the same as this year. But the copper was valued close to the market then and way below it now. It is a pity that Calumet & Hecla shareholders can not have a clearer statement of the company's finances than is given in this little sheet, about the size of ladies' note paper, which is sent out annually as a substitute for an annual report. Of one thing, however, shareholders can feel tolerably certain, the company never represents things better than they are. Of one other thing they can not or do not feel quite so certain, and that is that the management pays as large dividends as its financial condition warrants. It paid $5 July 6th. This would call for $500,000. Considering the unreasonably low valuation of copper above and what the company has earned since April 30th, it is not unlikely that the company has $2,000,000 on hand, or $20 per share. What a showing this would be after a year of terrible misfortune by fire!

A good deal of stock changed hands, many who bought at the low prices prevailing the past month realizing, but buyers were not found wanting to take all offered, and the highest price was reached on the last sale to-day. Next in point of activity was Franklin, which opened at $13, and advanced without reaction to $17¾. A dispatch says of the new find that the rock is rich, the extent of the lode, however, cannot be determined at present, but it is said to show for 3 per cent of copper; nearly 8000 shares were dealt in. Boston & Montana copper advanced from $47 to $49, and was fairly active. A dividend of $2 per share is announced.

Osceola also felt the boom, and shows an advance from $18¾ to $21¼ on a fair amount of business. Quincy very quiet and has not yet caught on. Sales of less than 100 shares at $68½, ex div. $5. Atlantic was fairly in demand and sold at $17 ex div. Kearsarge also shows signs of life and advanced to $7¾. This is one of the promising mines of the future. Allouez sold at $1, assessment unpaid, and later $2¾ was bid for it, assessment paid, but no stock came out at that price. National sold at $2¼ and Pewabic at $2¼. Bonanza sold at $1½. The non-producing mines as yet show no life, but we look for a great speculation in this class during the coming season, and already parties are quietly picking them up at low prices in order to meet the boom when it comes.

In silver stocks there is very little doing, but the indications are that there will be an active market in mining stocks this year and a higher range of prices. Dunkin is firm at 80c., sales and bid. The reports from the mine are quite satisfactory, and we expect to see it sell at over a dollar again in the near future.

3 P.M.—At the afternoon board prices were well maintained, Calumet & Hecla selling at the highest price of the day, viz., $260, which was also the bidding price. Franklin touched $18 far small lot, and Atlantic $17; $2½ was bid for Allouez, $3 asked; $70 for Quincy, none offered. Boston & Montana, $48½ bid, $49 asked; Tamarack, $154@$155.

**Horsford's Acid Phosphate**

**Makes Delicious Lemonade.**

**A teaspoonful added to a glass of hot or cold water, and sweetened to the taste, will be found refreshing and invigorating.**

## Copper Mines for Sale.

A group of COPPER MINES in a convenient locality in Arizona for sale.

The property is sufficiently developed to warrant reduction works.

A portion or the whole of this property will be sold reasonably. Principals only need apply. Full particulars, with references, will be given on application.

Address

**LOCATERS,**
Box 91, Tucson, A. T.